THE Business History REVIEW

Books Reviewed

ARE LISTED ON THE INSIDE FRONT COVER

The BUSINESS HISTORY REVIEW

Successor to

The Bulletin of the Business Historical Society, Inc.

Books Reviewed

THE BUSINESS HISTORY REVIEW is published quarterly by The Graduate School of Business Administration, Harvard University. All editorial and business correspondence should be addressed to The Editor, 212 Baker Library, Soldiers Field, Boston 63, Massachusetts. Entered as second-class matter at the post office, Boston, Massachusetts.

Printed at the Harvard University Printing Office.

By Marvin J. Barloon
PROFESSOR OF ECONOMICS
AT WESTERN RESERVE UNIVERSITY

The Expansion of Blast Furnace Capacity, 1938-52: A Study in Geographical Cost Differentials[1]

The great expansion of American blast furnace capacity since 1938 has worked significant changes in the geographical distribution of the industry. Many persons have assumed that the furnaces erected at new locations have abnormally high costs for their mineral raw materials, and that their survival, like their origin, is dependent on the boom market of wartime and postwar, Federal financing, and accelerated amortization for tax purposes. This analysis is not correct. From the viewpoint of raw materials cost, the furnaces at relatively new locations in Utah, California, and northeast Texas, are just as efficient as the furnaces at older locations such as Chicago and Pittsburgh. The data for the cost analysis which follows were collected directly from the firms involved.

The geography of the iron and steel industry within the United States has been significantly altered by the expansion in capacity during and after World War II. While a large percentage of the incremental plant was constructed in the Pittsburgh-Youngstown-Wheeling district, the relative importance of this region in the national industry has declined. Other Northern districts, such as Buffalo, Cleveland-Detroit, and Chicago, enjoyed an expansion roughly proportional to their former capacity. So did Birmingham. The disproportionately large growth in capacity came in the Southwest and the Far West, especially the latter. With regard to blast furnace plants, the incremental capacity built in Texas, Utah, and California combined – states which had little more than a token pig iron industry in 1938 – was about as great as that in the Pittsburgh-Youngstown-Wheeling district. While Pittsburgh with its satellite cities remains the leading producer, it has shared leadership in the expansion movement not only with Chicago and other established centers, but also with Texas and the Far West.

[1] The writer wishes to thank Mr. Robert S. Nycum for his excellent assistance in preparing the basic data of this study.

This redistribution of the industry raises many issues of location policy. One of the basic questions, relating particularly to the Western development, is that of raw materials economy. The smelting phase of the iron and steel industry (that is, the blast furnace operation) rests on low-cost access to suitable iron ore, coking coal, and limestone. In the established centers, such as Pittsburgh and Chicago, this geographical economy has long been proven out. For several generations most of the Northern industry has utilized Lake Superior ores and Appalachian coals brought together over the economical deep water route of the Great Lakes, supplemented by rail transportation. But, the geography and economy of Western materials is less known and certainly less proven by experience.

This article reports on the raw materials phase of the expansion from 1938 to 1952. Costs of raw materials, mined, prepared, and delivered to the furnace, are reported for the chief producing points within eleven major districts throughout the country. The resulting information has been combined into a summary cost figure per net ton of pig iron at each of these points, and related to the relative magnitude of capacity expansion in each district since before World War II. The result is a regional comparison of the economy of this expansion. It presents the Western growth in a considerably more favorable light than has generally been conceded.

Questionable Features of the Western Expansion

Certain features of the capacity expansion since 1938 suggest a financially uncertain or marginal character in the Western development. Much of this expansion during World War II was either built directly by the federal government or financed by funds from the Reconstruction Finance Corporation. A truly profitable outlook might have called forth a larger portion of private funds. As elsewhere in the country, accelerated amortization of new privately owned facilities was generally allowed for tax purposes. This would seem to have indicated pessimism on the part of both the private operators and the government as to the postwar future of these facilities. After the war the government disposed of a large portion of its own iron and steel plants at a realization much below construction costs, suggesting that expectations remained pessimistic.[2]

These features, of course, marked the wartime expansion of the industry in all parts of the country. But, in each district east of the

[2] For a summary of these features, see U. S. Tariff Commission, "Iron and Steel," *War Changes in Industry Series, Report No. 15* (Washington, 1946).

Mississippi, the incremental capacity to which they applied was in 1945 only a lesser portion of the total district capacity. By contrast, in Texas and the Far West, the incremental capacity represented at the end of the war most of the iron and steel plant of the region. Most of the Texas and Western industry was a war baby, a military facility. Its economic justification in a long-run peacetime economy remained to be tested, or even, outside of the region, to be generally asserted.

Now much less doubt remains. But the final proof is not yet in. It is true that after 1945 the Western facilities were successfully rounded out to civilian product lines and converted to peacetime production. The wartime debt has been greatly reduced or retired. Working capital has been increased and stockholders' equity augmented by retained earnings. And expansion has been resumed, especially since 1950. Nevertheless, much of the expansion, notably on the part of the "independents," has continued to rely on credit from the federal government. And since 1950 the accelerated amortization of the defense program has again played its part. As for the financial success of the peacetime period from 1945 to 1950, this was an era of heightened demand for iron and steel which probably cannot continue indefinitely.

The market for iron and steel throughout the United States since 1945 has been at levels which are essentially temporary. In part they have represented a catching-up with the consumption postponements of World War II. In part also they have represented a backlash of the Great Depression. For ten years during the 1930's the growth in the nation's wealth of durable goods, which developing technology was at that time making possible, was stunted by inadequate income. With the restoration of income through the inflationary financing of the war effort, a catching-up process got under way. Since the iron and steel industry has been working off the backlog of demand inherited from depression or wartime, this portion of its business must necessarily terminate when the catching-up process is completed. Of course, a more permanent process of economic growth also underlay the enlarged demand for steel after 1945.

Now, in addition to these two temporary components of demand, prevalent throughout the country, the industry of Texas and the Far West has had still a third – a rapidity of growth in both population and durable wealth which cannot be continued indefinitely. Of the nation's growth in population between 1940 and 1950, 25 per cent was concentrated in the three Pacific Coast states, and 6.8

per cent in Texas. The corresponding figures for growth in income payments from 1939 to 1949 are 12.5 per cent and 5.3 per cent of the total national increase. This growth has continued through 1953. The effect on the market for durable goods of which iron and steel are major components is obvious. "In Los Angeles County alone the value of building permits issued during 1952 was greater than Chicago, Detroit, Houston, Dallas, Philadelphia, New Orleans, Denver, Baltimore, and Boston combined."[3] However optimistic one may be about the future of Texas and California, this rate of growth must inevitably taper off, and when it does the Western demand for durable goods made of iron and steel will undergo an absolute decline. This decline will compound the downward readjustment which Texas and the Far West must share with the national economy as a whole.

The question remains, then, as to how the iron and steel facilities of the Southwest and the Far West will fare in a more normal market. They must have a cost and market orientation adequate to carry them, and to carry them profitably, at levels of output well below rated capacity as a continuing and normal operating condition. In addition, they must have financial reserves to sustain them, at least briefly, during the occasional sharp recessions to which this most fundamental of durable goods industries is so highly susceptible. How will they make out?

The Role of Mineral Raw Materials

We are concerned here, not with the survival of particular firms (which might be vitally affected by such matters as finance and the potentialities of financial reorganization), but rather with the economic foundations of the Western industry. A regional iron and steel industry depends upon the two factors, markets and materials. This article sets aside the subject of markets, crucial as it often is, in order to concentrate on the essential mineral raw materials: iron ore, coking coal, and limestone.

The iron and steel industry may be considered as consisting of two subindustries, the production of steel and the production of pig iron. Although these two types of production are usually conducted by the same firms on the same physical premises, they represent separable and somewhat dissimilar productive functions. In con-

[3] Kaiser Steel Corporation, *Annual Report*, Year Ended June 30, 1953, p. 8. This quotation may overstate the growth in Los Angeles by comparing the county-wide permits of that city with only the central cities, exclusive of suburbs, elsewhere.

centrating our attention on the mineral raw materials, we are dealing exclusively with the blast furnace phase of the industry, which takes nonmetallic minerals and through chemical processes converts them for the first time into metal. Thus the blast furnace is the basic instrument for maintaining and augmenting society's stock of products made from iron and steel.

The location of a blast furnace relative to suitable raw materials is crucial to its success. The cost of pig iron at any producing site is determined primarily by the raw materials: their quality, the costs of extracting them, the distances between the mining areas and the blast furnace, and the transportation routes and facilities bridging these distances. We have determined the costs of producing pig iron at a representative blast furnace establishment in the Chicago area as follows:

TABLE 1

	Percentages of Pig Iron Cost
Raw Materials:	
Mining and Preparation	54.0
Transportation to Plant	41.6
Total Raw Materials	95.6
Coke Oven and Blast Furnace Processing	22.2
Total Before Credits	117.8
By-Product Credits	17.8
Total Cost of Pig Iron	100.0

The dominant part played by the extraction and transportation of the raw materials is obvious from the data in Table 1.

It will be noted that the raw materials still at the mine after cleaning and beneficiation represent already a cost equal to 54 per cent of the total cost of the pig iron. The importance of raw materials transportation is also evident. At this blast furnace, 41.6 per cent of the total cost of the product consisted in moving the raw materials to the plant. This is representative for Northern operation and for most Western furnaces as well.

The Geographical Distribution of Blast Furnace Expansion

The expansion in the blast furnace industry from 1938 to 1952 thus raises basic questions of geographical economy. The expansion

increased the pig iron capacity of Texas and the Far West by magnitudes closely comparable to the expansion in the districts of Pittsburgh and Chicago, but in doing so it multiplied Southwestern and Western capacity to four times its prewar size. Table 2 presents a summary of this expansion in its geographical aspect.

TABLE 2

PIG IRON CAPACITY AT PRODUCING POINTS [a]

	1	2	3	4
	Millions of Net Tons			Percentage of 1952 Capacity which is Incremental
	June 30, 1938	January 1, 1952	Increase	
Pittsburgh, Youngstown, Wheeling District	22.5	25.8	3.3	12.8
Chicago District	11.4	14.7	3.3	22.4
Lake Erie and Detroit	9.2	12.1	2.9	23.9
California, Utah, Colorado	0.8	3.5	2.7	77.2
Baltimore District	2.1	3.2	1.1	34.4
Eastern Pennsylvania	4.5	5.6	1.1	19.7
Birmingham District	3.6	4.7	1.1	23.4
Texas	—	0.7	0.7	100.0
Ohio River District	1.0	1.6	0.6	37.5
Other (Increases in Capacity): Duluth, Virginia, Tennessee, Boston	0.7	1.1	0.4	36.4
Other (Decreases in Capacity): Eastern New York, Downstate Illinois, Iowa, and Missouri	1.7	0.7	−1.0 [b]	0.0
U. S. Total	57.6	73.8	16.2	21.9

[a] Compiled from *Iron and Steel Works Directory of the United States and Canada* (American Iron and Steel Institute, New York, respective issues).
[b] Decrease.

It will be noted in Table 2 that the construction of blast furnaces west of the Mississippi to the extent of 3.4 million tons of annual capacity was on a scale fully as great as either that of the Pittsburgh-Youngstown-Wheeling district or of the Chicago district, at 3.3 million tons each, and that it exceeded the expansion along the shore of Lake Erie, from Buffalo to Detroit, inclusive, by about half a million tons.

We have noted previously that in the history of the iron and steel industry of Texas and the Far West there is some implication of high-cost or marginal position as opposed to the older centers east of the Mississippi. The financial history of the Western industry suggests some likelihood of leaner ores, of coking coal possibly less suited to metallurgical use, of mining conditions less favorable, or of transportation routes more extended and costly. Is the blast furnace geography of the West actually inferior to that of Pittsburgh, Chicago, and the other established centers?

Our answer is negative. The Southwestern and Western industry with respect to its mineral materials is not inferior or marginal. Admittedly, there are in this large area some of the highest-cost blast furnace operations in the United States. But, there are also some of the lowest-cost operations. Indeed, if one could pinpoint the one lowest-cost blast furnace in the entire industry, it would probably be found in the Far West, although possibly in Birmingham. And, on balance, taking the high-cost operations with the low, the raw materials orientation of the blast furnace industry of Texas and the West is distinctly more economical than that of Pittsburgh, Chicago, or the other established Northern centers.

Principles of the Cost Analysis

This conclusion is derived from a detailed study of raw materials costs at representative blast furnaces at eleven locations early in 1950. The eleven locations were selected to provide a geographical comparison between all the major districts in the United States, Northern and Southern, and from coast to coast.

Geographically comparable data bearing on raw materials costs are readily available in published form from numerous reliable sources.[4] In this study, such data were systematically modified and supplemented by information obtained privately, in part by correspondence, but more usually by personal interviews with blast furnace engineers and other executives in charge of, or personally familiar with, practice at respective locations. However, for two of the Eastern locations studied, it proved necessary to rely on published information alone. Every effort was made to obtain data which were representative of each district. Thus, the resulting cost estimates appear a reliable concensus derived from representative conditions in the respective areas.

[4] A list of references most actively consulted in the preparation of this study appears in Appendix II.

Some blast furnace executives will doubtless find that the data in this article do not agree with their own cost experience. It is to be hoped that this will not generate undue skepticism. The data herein are intended to be representative rather than particular. If the figures were made more accurate for the furnaces of a particular operator, they would be that much less accurate for other furnaces in his district.

Furthermore, the data reported herein deliberately depart from actual practice in certain respects:

1. This study assumes that all blast furnaces are equally efficient, in the mechanical sense, in their use of materials. In this way, only those cost differences attributable to geographical location are represented.

2. Only the major mineral raw materials are considered. This excludes such materials as ferrous scrap, which is charged to blast furnaces in limited but varying amounts by many operators, and by others irregularly or not at all. In other instances, limited amounts of open-hearth slag are charged. In addition, certain minerals such as manganese ore, phosphate rock, and others, are utilized irregularly and in quantities sufficiently small not to affect greatly the total cost picture. This study confines attention to the three major mineral materials: iron ore, coking coal, and limestone.

3. The practice at a particular furnace with respect to burden composition and other engineering matters frequently reflects the personal predilection of the individual executive in charge. Many aspects of pig iron production do not rest on exact science, but remain in the field of custom and personal craft. Consequently there are found certain divergences of practice which appear irrevelant to the raw materials orientation of the furnaces. An effort was made in this study to adapt the data to the most broadly representative engineering practice.

4. Variations affecting costs are found in the particular institutional structure of individual establishments. For example, some furnaces belong to companies which are affiliated with ore mining or coal mining operations. Others purchase one or the other of these materials outright. This variation may affect the accounting charges. A few operate their own railroads from mine to furnace. Many are affiliated with river barge lines or deep water fleets on the high seas or the Great Lakes. Others are not. In this study it was assumed that all ore mines, coal mines and stone quarries, including cleaning, sizing, and beneficiation works, were affiliated with the blast furnace operating companies. The result is to report geographical differen-

tials in extraction and preparation costs rather than in market prices. On the other hand, nonintegration was assumed for all transportation. Rail and water charges were determined at published rates.

5. Variations are likewise found in all phases of cost accounting practice. For example, at some plants raw materials are charged to the blast furnace at standard costs, at others at current outlay. Again variations appear in by-product costing and credits. While it appears that most operators charge coke to the blast furnace without credit for coke-oven-by-products, others charge only the net figure. In this study we tried to deal only with current outlay costs as of early 1950. With respect to by-products, they are not reported here. While this introduces some bias adverse to those locations using materials of higher by-product content, this is not of sufficient magnitude to alter our conclusions.

Application of the above principles follows the pattern of previous studies of the geography of blast furnace materials.[5] However, in this study the number of pounds of each of the three major materials (the blast furnace burden) per net ton of product was determined for Northern furnaces from a survey made in 1948 of 140 furnaces at 26 Northern plants.[6] The ratios reported were applied to all districts dependent primarily on Lake Superior ores and Appalachian coals, namely, Pittsburgh, Chicago, Lake Erie and Detroit, Duluth, and the Ohio River district. This report had to make a new departure, however, with respect to other locations. Most previous studies of this character have been confined to the Northern districts and to Birmingham. Because of the relative uniformity of materials composition in the established Northern districts, a single burden composition was suitable in these studies for all Northern points. However, in the present study, Atlantic Coast, Texan, and Far Western locations were also included. These areas represent a great diversity of raw materials quality, so that separate burden

[5] The following are previous studies of blast furnace raw materials costs at respective locations:
Carroll R. Daugherty, Melvin G. DeChazeau, and Samuel S. Stratton, *The Economics of the Iron and Steel Industry* (New York, 1937), I, 378ff.
Marion Worthing, "Comparative Assembly Costs in the Manufacture of Pig Iron," *Pittsburgh Business Review*, Pittsburgh, VIII (31 Jan. 1938), 21.
William A. Haven, "The Manufacture of Pig Iron in America" (paper presented at meeting of The Iron and Steel Institute, London, May, 1940), 22.
E. C. Wright, "The Economics of Raw Material Supplies in the Birmingham District," *Mining Engineering*, Vol. 187 (1950), 1214.

[6] R. E. Garrett, "Raw Materials Problems in Birmingham," American Iron and Steel Institute, New York, Regional Technical Meeting at Birmingham, Alabama, October 27, 1948, page 214.

composition had to be calculated for each point not dependent primarily on Lake Superior ores and Appalachian coals.

Relative Raw Materials Costs at the Blast Furnace

The result of these investigations is the cost at the blast furnace, in dollars and cents per net ton of pig iron, of the three major mineral materials (iron ore, coking coal, and limestone), at each of eleven locations within the United States. These summary data for each of the eleven districts appear as the second column in Table 3.

These costs should be regarded as reasonable approximations rather than as precise data. However, because of a uniformity in the underlying assumptions they approach precision as measures of the relative materials costs between locations. Probably, therefore, even as small a differential as that between Chicago at $21.78 and Pittsburgh at $21.38 is significant.

From these data we may classify pig iron producing districts as follows:

A. *Lower-Cost Districts*:
   California-Utah-Colorado
   Baltimore
   Duluth, Minnesota (the point representing Item 10)

B. *Intermediate-Cost Districts*:
   Pittsburgh-Youngstown-Wheeling
   Lake Erie and Detroit
   Chicago
   Eastern Pennsylvania
   Granite City, Illinois (St. Louis area, the point representing Item 11)

C. *Higher-Cost Districts*:
   Birmingham
   The Ohio River District

However, more can be said about particular points. Our data on Texas and the Far West are averages. The following particular Western locations may be abstracted from these averages:

A. *Lower-Cost Point*:
   Geneva, Utah, at $16.90

B. *Intermediate-Cost Points*:
   Fontana, California, at $21.43.
   Lone Star, Texas (northeast Texas), at $21.72.

C. *Higher-Cost Point*:
   Houston, Texas, at $26.07.

TABLE 3

Cost of Raw Materials per Net Ton of Pig Iron and Capacity Expansion, 1938–1952

Eleven Districts

	1 Increase in Capacity, 1938–1952 (Millions of Net Tons)	2 Materials Cost at Furnace per Net Ton Pig Iron, 1950	3 Annual Cost of Materials for Expansion Increment (Millions) (Col. 1 × Col. 2)
1. Chicago District	3.30	$21.78	$71.91
2. Pittsburgh, Youngstown, Wheeling District	3.29	21.38[a]	70.27
3. Lake Erie and Detroit	2.93	21.49[b]	62.95
4. California, Utah, Colorado	2.65	19.17[c]	50.87
5. Baltimore District	1.14	19.82[d]	22.63
6. Eastern Pennsylvania	1.11	21.94[e]	24.34
7. Birmingham District	1.10	23.37	25.80
8. Texas	.69	23.89[f]	16.57
9. Ohio River District	.60	24.16[g]	14.55
10. Other (Increases in Capacity): Duluth, Virginia, Tennessee, Boston District	.37	19.88[h]	7.28
11. Other (Decreases in Capacity): Eastern New York, Downstate Illinois, Iowa, and Missouri	−.97	22.85[i]	−22.27
12. U. S. Totals and Averages	16.21	21.27	344.89

[a] Calculated for Pittsburgh. Most other locations within this district are higher cost.
[b] Calculated for Buffalo. Raw materials composition and transportation costs are highly similar for all points on Lake Erie. Detroit costs are higher.
[c] Geneva, Utah, and Fontana, California, accounting for 89 per cent of the capacity expansion in the Far West.
[d] Sparrows Point, Maryland.
[e] Bethlehem, Pennsylvania. Although there are wide variations in cost within this district, Bethlehem accounted for 69.6 per cent of the capacity expansion.
[f] The Texas cost is an average of Lone Star (northeast Texas) and Houston. There is a wide cost disparity between these two points.
[g] Ashland, Kentucky, and Portsmouth, Ohio.
[h] The calculation is for Duluth, representing 74 per cent of the total capacity expansion of these scattered points.
[i] Cost for Granite City, Illinois, representing 63 per cent of the capacity operating in these areas in 1952.

A word of caution: it is important not to draw conclusions from this as to the economic feasibility of the present works at any of these locations. We are not considering important questions as to market

orientation, but are noting only the relative cost of raw materials at the blast furnace. Furthermore, some of the districts contain a large number of blast furnaces for which these data report approximate averages, averages composed of wide diversities as, for example, in Birmingham and Chicago.

To give proper weight to each regional cost in the total national picture, the growth in annual capacity in that region may be set alongside the cost per ton of pig iron. The period of growth to which we refer is that from 1938 to 1952. The expansion in annual tonnage capacity has already been presented as Column 3 in Table 2, and for purposes of comparison it is reintroduced as Column 1 in Table 3.

Now if, for each district, we multiply the growth in annual net tons of output capacity by the estimated cost of raw materials per ton, we have an approximation to the annual raw materials cost of operating the incremental plant in each district at capacity rate for one year. This series appears in Table 3 as Column 3.

Actual Costs Relative to National Average

Column 3 thus represents the relative materials cost of a year's capacity production at each point. How high or low is each item? By way of a standard, we may determine what the cost *would have been* at each point if its raw materials cost were at the national average. This average, at $21.27 per ton, appears at the bottom of Column 2, Table 3. It has been determined by dividing the sum of Column 3, the total national incremental cost, by the sum of Column 1, the national increment to capacity. Therefore, let us observe how each district would have fared if its costs were measured at the national level rather than by its own particular cost position. This information appears in Table 4 as Column 2. It represents what the cost of a year's supply of materials would have been for the incremental capacity at each point if these materials could have been obtained at that point at the same cost as the nationwide average. We have here set it alongside the approximation of actual cost, reintroduced in Table 4 as Column 1.

It will be noted that the raw materials costs of operating the incremental capacity in some districts are higher than the national standard for that magnitude of capacity. These districts are Birmingham, the state of Texas, the Ohio River district, and Chicago. (It will be recalled again that a wide cost disparity exists between the two producing points in Texas.) Furthermore, the actual costs

are higher than the national standard at Granite City, Illinois, in the St. Louis area, the point referred to here to represent scattered locations in Iowa, Illinois, Missouri, and eastern New York where capacity declined.

TABLE 4

Annual Cost of Materials
Blast Furnace Expansion Increment
Estimated Actual Cost and Cost of Equivalent Capacity at National Average

	1 Annual Cost of Materials for Expansion Increment (Millions) (From Col. 3, Table 3)	2 Annual Cost of Materials for Expansion Increment at U.S. Average of $21.27 (Millions)	3 Excess of Average over Actual (Millions) (Col. 2–Col. 1)
1. Chicago District	$71.91	$70.22	−$1.68
2. Pittsburgh, Youngstown, Wheeling	70.27	69.91	−.36
3. Lake Erie and Detroit	62.95	62.30	−.64
4. California, Utah, Colorado	50.87	56.44	+5.57
5. Baltimore District	22.63	24.29	+1.66
6. Eastern Pennsylvania	24.34	23.60	−.74
7. Birmingham	25.80	23.48	−2.32
8. Texas	16.57	14.75	−1.82
9. Ohio River	14.55	12.81	−1.74
10. Other (Increases in Capacity): Duluth, Virginia, Tennessee, Boston District	7.28	7.79	+.51
11. Other (Decreases in Capacity): Eastern New York, Downstate Illinois, Iowa, and Missouri	−22.27	−20.73	−1.54
12. U. S. Totals	344.89	344.86	——

In four additional districts the costs of operating the incremental capacity are close enough to the national standard that the disparity is not highly significant. These four are Pittsburgh, the Lake Erie shore, Duluth, and eastern Pennsylvania.

Finally, two districts are in a distinctly more favorable position,

Baltimore and the Far West, the Baltimore district by a moderate but distinct margin, and the Far West to a degree almost phenomenal. It may be noted again that the cost data on Far Western operations have been derived for Fontana, California, and Geneva, Utah, representing 89 per cent of the capacity expansion of the three states grouped together here.

From the data of Table 4 it becomes evident that with respect to an economical orientation to raw materials, the blast furnace expansion of Utah and California has been the most advantageous in the entire country. Admittedly our data are averages and approximations. But the favorable margin with respect to the Far Western operations is so great as to leave little room for doubt.

With respect to Texas, its distinctly unfavorable showing results from the inclusion of a raw materials cost of $26.07 per net ton of pig iron at the city of Houston, among the highest in the country. This one furnace, therefore, may be taken as an exception to our general observation with respect to the areas west of the Mississippi. On the other hand, the blast furnace establishment in the northeastern part of Texas at Lone Star, appears about on a parity with Chicago, with an estimated materials cost of $21.72. Therefore, it appears reasonable to include Texas with the Far Western operations as containing sites for blast furnace operation as economical as those of the older centers.

Pig Iron Production as an Increasing Cost Industry

There has been some inclination to regard the iron and steel industry of the United States as an increasing cost industry, that is, as an industry compelled to turn to leaner and less accessible raw materials as it continues to grow. Much attention has been drawn to depletion of the Lake Superior open pit ores, to the more difficult mining conditions encountered with expansion of mining operations, and to the increased preparation and beneficiation of both coal and ore which seems to have accompanied the continuing growth of the industry, at least during the past five years. Recourse to the more distant and less known mineral resources of Texas, Utah, and California has also appeared as a feature of increasing costs in this sense.

For example, at first sight, Fontana, California, has appeared badly located with respect to ore, which in earlier years was carried by rail in major quantities all the way from Utah, and with respect to coal carried, likewise by rail, from both Utah and Oklahoma. Again,

Northern engineers and executives familiar with the favorable mining conditions of the Lake Superior District have eyed with considerable misgiving the extremely thin and widely scattered ores of northeast Texas.

Nevertheless, by suitable adaptation of mining and operating practice to local conditions the executives at these locations have achieved a materials economy far better than generally anticipated. If the iron and steel industry is, in fact, an increasing cost industry in its relationship to mineral raw materials, the expansion in the West is certainly not an example of this feature.

We thus reach the conclusion that whatever cloud may at one time have hung over the future of the iron and steel industry of Texas and the Far West, this cloud has been largely dispelled with respect to raw materials orientation. As we have noted, the long-run adequacy of western markets may continue to be questioned with respect, at least, to market stability and diversity. And, for Western operations at a distance from large cities, the availability of suitable grades of low-cost scrap remains an open question. But with a raw materials foundation as solid as appears from this study, most of the Southwestern and Western industry enjoys a cost position sufficiently favorable to absorb a degree of marketing disadvantage, should such develop, and we can remain reasonably optimistic for the new industry of the West even under market conditions considerably less than ideal.

APPENDIX I

Components of Cost at Respective Locations

Until recently we have been somewhat bemused by the phenomenal raw materials economy of our Midwestern iron and steel industry. Our literature on the commercial structure of the industry has commonly described its raw materials geography almost exclusively with reference to this region. The blast furnaces from Pittsburgh to Chicago obtain almost all their two major materials from the same general sources, the Lake Superior iron ore district and the Appalachian coal fields. A description of the Great Lakes shipping route and of the two primary types of location — that at or near the coal fields, as in Pittsburgh, and that at the lake shore, as in Chicago — constituted the dominant theme of this literature. The entirely different raw materials structure of the Birmingham industry has usually been given brief supplementary treatment, and that of Sparrows Point on the Atlantic Coast has sometimes been mentioned as an afterthought.

This treatment will no longer suffice. We have noted the Western expansion, the continuing growth of the industry both in the West and on the Atlantic Coast, and the clear raw materials economy of these two regions. Therefore it

becomes worth while to complicate our description by the inclusion of other districts of more diverse character. The base iron content of Lake Superior ores has been 51.5 per cent, and this composition called for a burden of between 7,000 and 7,600 pounds per net ton of iron almost any place in the Midwestern districts. Now, however, we must be concerned with major tonnages of ores with an iron content of anywhere between 30 per cent and 69 per cent, situated at diverse locations from Venezuela to the Arctic Circle, and calling for burdens varying from less than 7,000 pounds to as high as 9,600 pounds. We can no longer classify ore mining as exclusively open-pit or underground. We have to add a third form, strip ore mining, which is conducted with evident economy in northeast Texas.

To minimize the complexity of the picture, we have summarized the chief components of materials cost for each of the thirteen locations in Table A. Several points are immediately evident from this table. One is the relatively minor importance of fluxing stone as a cost factor. This is because of the wide distribution of suitable limestone within relatively easy access of every important blast furnace location, because of the lesser tonnage used, and because of the relatively low cost of extraction. Therefore, the more significant cost variations between furnaces will be sought in the supply of iron ore and coking coal.

The second general point relates to the cost of mining and transporting each of these two materials to the blast furnace. At each location some optimum combination has been found between each cost and between the two materials. For example, ore mining and preparation costs at Birmingham and in northeast Texas run very high, but transportation cost is extremely low. The converse is true for Pittsburgh and Sparrows Point. Again, at Chicago the cost of coal is high, but the cost of ore is low, the converse of the relationship at Pittsburgh. It may be informative first to note some of the major variables affecting these relative costs and then to observe how each location is affected.

With regard to the cost of mining ore, major variations occur as between open pit mining and underground mining. For example the cost of mining open pit ore in Minnesota in 1950 averaged $1.82 per gross ton whereas underground ore averaged $4.199.[7] But a second and equally important variable is the relative leanness of the ore. For example, if an ore has an iron content of 50 per cent, about two tons of it have to be mined and transported for each ton of pig iron. But, if the ore has a ferrous content of only 33⅓ per cent, obviously three tons have to be charged to the furnace, and mining and transportation costs per ton of iron will be 50 per cent higher. Furthermore, a leaner ore by virtue of containing less iron contains that much more non-ferrous material, usually silica and alumina. This material has to be fluxed, thereby requiring more stone consumption and, even more important, more coke consumption, raising the requirements of these two materials, but producing no corresponding salable product. Consequently, a leaner ore usually means high mining and transportation costs of coal and limestone per ton of pig iron.

With regard to coal costs, it should be noted that the coking qualities of coal vary greatly. There is virtually no coal of coking quality suitable for blast furnace use in some of the most important coal mining states, such as Ohio, Indiana, and most of Illinois. Certain Illinois coals from a few locations may be coked commercially, but only under cost handicaps. This is the reason that the blast

[7] Henry H. Wade and Mildred R. Alm, *Mining Directory of Minnesota* (University of Minnesota, Mines Experiment Station, May 1, 1952), 257.

TABLE A

Cost of Respective Raw Materials per Net Ton of Pig Iron at Thirteen Blast Furnace Locations

	ORE			COAL			STONE			Total Raw Materials Cost per Net Ton Pig Iron
	Pounds per Net Ton Pig Iron	Cost of Mining and Beneficiation	Cost of Transportation	Pounds per Net Ton Pig Iron	Cost of Mining and Preparation	Cost of Transportation	Pounds per Net Ton Pig Iron	Cost of Quarrying and Preparation	Cost of Transportation	
Chicago	4032	$4.46	$4.55	2350	$7.14	$5.02	1000	$.24	$ .37	$21.78
Pittsburgh	4032	4.29	8.23	2485	7.16	.78	1000	.24	.68	21.38
Buffalo	4032	4.46	4.58	2485	7.40	3.98	1000	.25	.82	21.49
Duluth	4100	5.82	1.98	2460	6.82	4.55	1154	.28	.43	19.88
Ohio River	4032	5.27	8.60	2450	7.14	1.88	1000	.27	1.00	24.16
Granite City	4030	5.38	4.98	2515	6.43	3.76	1045	.26	2.04	22.85
Bethlehem	3790	6.66	5.69	2380	4.61	4.61	900	.15	.22	21.94
Baltimore	3580	3.39	6.90	2245	4.44	4.33	852	.21	.55	19.82
Birmingham	5400	8.97	.94	3700	12.43	.74	500	.13	.16	23.37
Houston	4160	5.30	4.98	2575	8.04	6.22	1555	.70	.83	26.07
Lone Star, Texas	3980	8.19	—	2710	8.85	2.68	1805	.93	1.07	21.72
Geneva, Utah	3780	3.41	3.46	2880	6.12	3.28	918	.23	.40	16.90
Fontana, Calif.	3670	3.52	3.60	2560	6.37	7.44	935	.23	.27	21.43

furnace industry of the Chicago district uses very little Illinois coal. Therefore, the blast furnace operator must often decide whether to use less desirable coals near at hand or to incur higher transportation costs to get better coals from a greater distance.

Coal mining costs are likewise subject to variation, depending on thickness of seams, roof conditions, undulations of the seam, underground water conditions, and rock partings (strata of rock sandwiched within the coal seam). Mechanized mining, including strip mining, accentuates the differentials arising from natural conditions by reducing the human faculty of selectivity.

Coal cost also tends to vary inversely with the coke yield. For example, if a particular coal will yield coke equal to 70 per cent of the coal weight, less coal has to be mined and transported than if it will yield only 60 per cent. Of course the 60 per cent coal will yield more by-products, thereby considerably offsetting the disadvantage.

Finally, it should be observed that blast furnace executives adjust their burden practice to compensate for their particular cost disadvantages. For example, the furnaces at Duluth have cheap access to ore and higher cost access to coal than do most other locations using lake ores. Therefore, they sometimes save by employing ores of lower iron content and, in contrast to Pittsburgh and Buffalo, select and coke their coals in such a way as to use a lesser coal tonnage. Similarly, Chicago is less well located with respect to coal than Pittsburgh. Because the Chicago operators run such a high transportation cost on coal, they operate their ovens and furnaces so as to use less of it per ton of product. Perhaps the most extreme economies on coal tonnage are those realized at Fontana, California, a reflection of the long distances coal must be hauled to this operation.

With these influences in mind, the particular sources of each material and its notable characteristics are tabulated for each blast furnace location in Table B. While this table does not try to present all the significant features of materials supply for each location, it does include those which are especially characteristic and shows something of the foundation for our favorable conclusions with respect to the Western section of the blast furnace industry.

TABLE B

Geographical Sources			Characteristics		Routes	
Chicago						
Coal:	So. W. Va., Virginia Eastern Kentucky	50.0% 45.5%	Coke Yield	73%	Rail-Lake All rail	33.4% 66.6%
	Illinois	4.5%				
Ore:	Minnesota	75.0%	Underground Open Pit	24.1% 75.9%	Lake	
	Michigan	25.0%	1.15 tons mined per 1.0 ton usable Fe[a]	50.5%		
Stone:	Calcite, Michigan				Lake	

[a] Ferrous content.

TABLE B (*continued*)

Geographical Sources			Characteristics		Routes
Pittsburgh					
Coal:	Southeastern Pennsylvania	85%	Coke Yield	69%	Barge and Rail
	Johnstown Dist.	15%			
Ore:	Minnesota	90%	Underground	86.8%	Lake-Rail via
			Open Pit	13.2%	Conneaut
	Michigan	10%	Fe 50.5%		
Stone:	Hillsville, Penna.				Rail
Buffalo					
Coal:	Central Penna.	10.0%	Coke Yield	69.4%	Rail-Lake 35.8%
	Western Penna.	55.0%			All Rail 64.2%
	No. W. Va.	16.5%			
	So. W. Va., Va.	14.5%			
	Ky., Tenn.	4.0%			
Ore:	Minnesota	75%	Underground	24.1%	
			Open Pit	75.9%	Lake
	Michigan	25%	Fe 50.5%		
Stone:	Gasport, N.Y.				Rail
Duluth					
Coal:	Harlan County, Kentucky	79.5%	Coke Yield	68.3%	Rail-Lake
	Pocahontas	20.5%			
Ore:	Minnesota		Underground	50%	
			Open Pit	50%	All Rail
			Fe 49.6%		
Stone:	Calcite, Michigan				Lake
Ohio River					
Coal:	Southern W. Virginia:		Coke Yield	70%	All Rail
	Big Sandy	80%			
	Pocahontas	20%			
Ore:	Minnesota	100%	Underground	50%	Lake-Rail via
			Open Pit	50%	Lake Erie ports
			Fe 50.5%		
Stone:	Columbus, Ohio				Rail

TABLE B (*continued*)

Geographical Sources			Characteristics		Routes
Granite City, Illinois					
Coal:	Pocahontas	30%	Coke Yield	67.9%	All Rail
	Pennsylvania	15%			
	Illinois	55%			
Ore:	Iron Mountain, Missouri	26.0%			
	Southern Minnesota	22.4%	Underground Open Pit	65.8% 34.2%	All Rail
	Northern Minnesota	17.7%	Fe 50.5%		
	Michigan	33.9%			
Stone:	Glencoe, Mo.				All Rail
Bethlehem, Penna.					
Coal:	Northern W. Va.	94.5%			
	Virginia	2.8%	Coke Yield	71.5%	All Rail
	Central Penna.	2.7%			
Ore:	Cornwall, Penna.	50%	Cornwall: Ratio crude ore as mined to beneficiated: 1.58.		All Rail and Lake-Rail via Erie, Penna.
	Lake Superior	50%	All ore:		
			Open pit	56.6%	
			Underground	43.4%	
Stone:	Philadelphia District				All Rail
Baltimore					
Coal:	Northern W. Va.	94.5%	Coke Yield	71.5%	All Rail
	Virginia	2.8%			
	Central Penna.	2.7%			
Ore:	Chile	40.8%	Foreign ores are 100%		
	Venezuela	38.8%	Open Pit.		Ocean.
	Lake Superior	20.4%	All ores: Fe 56.8%		Lake-Rail via Erie
Stone:	Bittinger, Penna.				All Rail

TABLE B (*continued*)

Geographical Sources		Characteristics	Routes
Birmingham			
Coal:	Central and Northern Alabama	Mine 1.4 tons run-of-mine per 1.0 ton dry washed coal. Coke Yield 71.5%	All Rail
Ore:	Central and Northern Alabama	Underground 87.7% Open Pit 12.3%, for which 4.94 tons are mined per 1.0 ton usable. Sintered: 28%. Fe as charged 37.0%	All Rail
Stone:	Central Alabama		All Rail
Houston			
Coal:	Alabama 30.2% New Mexico 8.4% Okla., Ark. 61.4%	Coke Yield 70.0%	All Rail
Ore:	Northeast Texas 75% Durango, Mexico 25%	Texas ore strip mined at 4.25 tons crude per 1.0 ton usable ore. High silica content. Fe as charged 48.7%	All Rail
Stone:	Ogden, Texas		All Rail
Lone Star, Texas			
Coal:	Eastern Oklahoma	Coke Yield 72%	All Rail
Ore:	Lone Star, Texas	Strip mined at 4.25 tons crude ore per 1.0 ton usable. High silica content at 20%. Fe as charged 51.2%.	.....
Stone:	Chico, Texas		All Rail
Geneva, Utah			
Coal:	Columbia Utah 88% Eastern Oklahoma 9% Coal Tar pitch 3%	Coke Yield 57%	All Rail
Ore:	Iron Mountain, Utah	Open pit 100%. Sintered: 30%. Fe as charged 53.7%	All Rail
Stone:	Payson, Utah		All Rail

TABLE B (*continued*)

Geographical Sources			Characteristics		Routes
Fontana, California					
Coal:	Price, Utah	88%	Coke Yield	62%	All Rail
	Eastern Okla.	10%			
	Coal Tar pitch	2%			
Ore:	Southern California	74%	Open Pit 100%.		
	Iron Mountain Utah	26%	Sintered: 40% Fe as charged 55.5%.		All Rail
Stone:	Colton and Ore Grande, Calif.				All Rail

APPENDIX II

References

References consulted directly in the preparation of this study include the following:

Henry H. Wade, *Mining Directory of Minnesota*, University of Minnesota, Mines Experiment Station, Part IV, General Statistics, respective issues.

U. S. Department of the Interior, Bureau of Mines, publications as follows:

W. H. Young, R. L. Anderson, and E. M. Hall, "Coal — Bituminous and Lignite," preprint from the *Bureau of Mines Minerals Yearbook*, 1951.

Oliver Bowles, F. M. Barsigian, and A. H. Seebold, "Lime," preprint from the *Bureau of Mines Minerals Yearbook*, 1950.

D. G. Runner and Nan C. Jensen, "Stone," preprint from the *Bureau of Mines Minerals Yearbook*, 1947, pp. 1112–1116.

Norwood B. Melcher and Jachin M. Forbes, "Iron Ore," preprint from the *Bureau of Mines Minerals Yearbook*, 1949 and 1950.

W. H. Young, R. L. Anderson, and E. M. Hall, "Bituminous Coal and Lignite in 1950," *Mineral Market Report, No. 2032*, Bureau of Mines, Nov. 20, 1951.

J. A. DeCarlo and Emma E. Ryan, "Distribution of Oven and Beehive Coke in 1950," *Mineral Market Report, No. 2034*, Nov. 26, 1951.

"Bituminous Coal Distribution by Market Areas, Calendar Year 1944, Year Ended September 30, 1945, and Coal Year, 1945–46," *Mineral Market Report, No. 1500*, March, 1947.

H. Foster Bain, *A Pattern for Western Steel Production.* Information Circular, Bureau of Mines, I.C. 7315, March 1945.

"Survey of Commercial Bituminous Coal Mines," Office of Temporary Controls, Office of Price Administration, Economic Data Analysis Branch, No. 15, OPA Economic Data Series, May, 1947.

"Preliminary Survey of Operating Data For Commercial Bituminous Coal Mines for the Years 1943, 1944, and 1945," Office of Temporary Controls, Office of

Price Administration, Economic Data Analysis Branch, No. 2, OPA Economic Data Series.
Annual Statistical Report, American Iron and Steel Institute, New York, respective issues.
Skillings' Mining Review (weekly), Duluth, Minnesota, respective issues.
J. D. Saussman, "Sintering Practice at Fontana, California," *Blast Furnace Coke Oven & Raw Materials, 1948 Proceedings*, Vol. 7, American Institute of Mining and Metallurgical Engineers, New York.
C. H. Lenhart, "Blast Furnace Practice at Fontana," *Iron and Steel Engineer*, July, 1949, p. 35.
Gene Thackery, "Mining Ore in Eagle Mountain, California," *Blast Furnace and Steel Plant*, Sept., 1949, p. 1081.
Prospectus, 1,600,000 Shares of $1.46 Preferred Stock, 800,000 Shares of Common Stock, Kaiser Steel Corporation, Oct. 24, 1950.
Charles Longenecker, "Lone Star Rapidly Increasing Service in the Southwest," *Blast Furnace and Steel Plant*, Sept., 1950, p. 1042.
W. R. Bond, "Lone Star Steel Company Operations," *Blast Furnace and Steel Plant*, May, 1953, p. 508.
R. E. Garrett, "Raw Materials Problems in Birmingham," American Iron and Steel Institute, New York, Regional Technical Meeting at Birmingham, Alabama, Oct. 27, 1948.
Walter Mathesius, "Raw Materials Problems of the Intermountain and West Coast Areas," American Iron and Steel Institute, New York, Regional Technical Meeting at San Francisco, California, Nov. 5, 1948.
A. P. Gaines, "The Calculation of the Value of the Raw Material in Pig Iron Making," *The Iron Age*, April 14, 1904, p. 12.
George W. Hewitt, "Comparative Values of Iron Ore at the Blast Furnace," *Blast Furnace and Steel Plant*, Dec., 1939.
Ralph H. Sweetser, *Blast Furnace Practice* (New York, 1938).

By Leonard J. Arrington
ASSOCIATE PROFESSOR OF ECONOMICS AT
UTAH STATE AGRICULTURAL COLLEGE

The Mormon Tithing House: A Frontier Business Institution

A local tithing office or bishop's storehouse was found in every Mormon settlement of the Mountain West during the nineteenth century. Besides functioning as collector of revenue for the Church of Jesus Christ of Latter-day Saints, the tithing house played a major role in the economic life of the community. It served as communal receiving and disbursing agency, warehouse, weighing station, livestock corral, general store, telegraph office, employment exchange and social security bureau. These functions carried it into banking, the fixing of official prices, and bulk selling. Thus the history of this institution shows, in a much different setting, counterparts of many procedures and problems often regarded as distinctly modern.

Historically, the Mormon tithing house was an outgrowth of the communal storehouse which was established by the Mormons on the Missouri frontier as part of a communitarian experiment in the early 1830's.[1] Leaders of the newly founded "Church of Christ," as it was then called, set up an ideal economic system called "the Lord's law," or the law of consecration and stewardship. Under this system all members of the community were asked to bring into the bishop's storehouse their surplus income and wealth. This fund was used to buy land, construct chapels, temples, and church economic enterprises, support full-time church officials, and provide for the needs of the poor. When the law of consecration and stewardship was replaced in 1838 by the "lesser law" of tithing, each church member was required to pay to the bishop a tenth of his "annual increase," or net income. These donations were also to be received at the bishop's storehouse. The law of tithing functioned briefly in Nauvoo, Illinois, in the early 1840's, and was applied in all Mormon settlements in the West after the arrival of the Mormon pioneers in the Great Basin in 1847.

Because of the acute shortage of monetary media, almost all

[1] Leonard J. Arrington, "Early Mormon Communitarianism: The Law of Consecration and Stewardship," *Western Humanities Review*, VII (1953), 341–69.

tithing receipts in territorial Utah were "in kind." The task of receiving produce of every type, storing and handling it, expending it and converting it into a form suitable to church creditors, both in Utah and elsewhere, took no small amount of doing. To use Brigham Young's term for it, it required "financiering" of a very high order. The receipt and disbursement of the tithes of the faithful necessitated the erection, in every ward and settlement, of a tithing office and storehouse, with accompanying stockyard. These facilities were in the charge of the local bishop or presiding elder. A district tithing office and storehouse, under the management of a "stake president" or regional presiding bishop, was similarly established in every valley or "stake." Finally, a central tithing office and storehouse, occupying half a block, and variously known as the "General Tithing Office" and "Bishop's General Storehouse," was set up in Salt Lake City to serve the entire church. This was under the direction of the Presiding Bishop of the Church who, at all times, was subject to the First Presidency of the Church and the trustee-in-trust of the church's funds and property.[2] The Presiding Bishop also exercised general supervision over several "church farms," which were located at several places in the territory, and on which herds of tithing horses, cattle, sheep, and their offspring could graze and be quartered. The church investment in these facilities for the receipt and disbursement of tithes was a major item in its statement of assets. The expense of administering the revenue which came into its tithing offices was a not inconsiderable portion of annual church outlays.

Leaders of the Mormon Church have never made available for study the records of the General Tithing Office in Salt Lake City. Nor has the church ever made any public accounting of its tithing receipts in the nineteenth century, in part or in whole.[3] The records of the local and stake (district) tithing offices, however, throw light on many of the problems of the pioneer economy which are not otherwise exposed to view. The uniformity of tithing accounts, procedures, and administration in all settlements in the Rocky Mountain Zion makes it possible to generalize on the basis of

[2] The Mormon Church is governed by a president and two "counsellors," who comprise a "First Presidency." The president of the church is also "trustee-in-trust" of the properties of the church. The Presiding Bishop is appointed by the president to oversee the receipt and disbursement of tithes by the local bishop, and to supervise church land projects.

[3] The two exceptions are the statements made in 1852 and 1880, respectively, that tithing receipts had been some $250,000 for the period November, 1848, to March, 1852; and approximately $460,000 for the year 1879 (*Millennial Star*, XIV [1852], 323; *Salt Lake Tribune*, 7 April 1880).

individual samples. The operations of the Cache Valley tithing office from 1863 to 1900, as described in its daybooks, ledgers, and journals, provide such a sample.[4]

Cache Valley, in northern Utah, was first settled in 1856 and was the object of a considerable migration in 1859. Extensive tithing office facilities were constructed during the next three years, and a system of uniform well-organized accounts was begun in 1863.[5] While Cache Valley geographically includes much of Oneida County, Idaho, as well as Cache County, Utah, the ecclesiastical jurisdiction of the Cache Valley tithing office, during most of the period 1863–1900, was roughly coextensive with Cache County, Utah.[6] The population of Cache County in 1860 was listed at 2,605, and rose to 8,229 in 1870. Ten years later it was 12,562; in 1890 it had risen to 15,509; and at the turn of the century, it was the residence of 18,139 persons.[7] More than 90 per cent of these people, in each decade, were professed Latter-day Saints. Roughly 20 per cent of these people were heads of families, and it was this 20 per cent which constituted the tithepaying membership of the church in Cache Valley throughout the period 1863 to 1900. The number of tithepayers rose from a few hundred in 1860 to 1,479 in 1870; 2,750 in 1880; 3,092 in 1890; and 4,405 in 1900. An average of 91 per cent of those asked to pay tithing during this period did so. Only a comparatively small number of persons, ranging from 74 to 418 per year, or from 3 per cent to 12 per cent of the total eligible, did not pay tithes.[8] A large number of "poor" were excused from paying tithes and were not classed as nontithepayers.[9]

[4] This paper is based largely on local materials which were found while the writer and others were doing research on the history of Cache County, Utah. The records of individual tithing contributions are strictly personal, and therefore are not available to the historian. The present paper has used only those records relating to the general business operations of the tithing office.

[5] It is probable that the Wellsville tithing office served the valley until 1860. Wellsville was the location of the first permanent settlement in Cache Valley. The records of the office from 1860 to 1863 are available but are not systematic enough to include in the present study.

[6] In 1884 all of that part of Cache Valley located in Idaho was organized into the Oneida Stake, leaving the Utah settlements in Cache Stake.

[7] "Measures of Economic Changes in Utah, 1847–1947," *Utah Economic and Business Review*, VII (Dec., 1947), 11.

[8] It is of some interest that the highest proportion of nontithepayers (12 per cent in 1879) was followed in 1880 by the lowest proportion of nontithepayers (3 per cent). Evidently there was a rather remarkable "get out the tithe" campaign in 1880.

[9] In the year 1895, out of a population of 17,276 persons and 3,057 families, there were 3,283 tithepayers, 1,071 poor who were excused, and 381 nontithepayers (Letter Book of L. R. Martineau, Clerk, Cache Valley Tithing Office, p. 281, Cache Stakehouse vault, Logan, Utah).

Those making tithing donations and other offerings took them directly to their bishop or to the local tithing office, of which there were about 16 in Cache Valley.[10] The valley tithing office, which co-ordinated and combined the activities of the small storehouses in these settlements, was in Logan, the largest town in the county, and approximately 90 miles north of Salt Lake City.[11] It is from the records of the tithing office in Logan, and its local branches, that the following data have been obtained.[12]

All the tithing office accounts and records stem, of course, from daybooks and journals of the various branch tithing houses, which contain accounts for each tithepayer in the ward or settlement. The form in which these accounts were kept is illustrated by the account of a certain tithepayer in Hyrum – a Scandinavian settlement in the south end of Cache Valley. His account for the year 1872 shows the following credits: [13]

Date	*Item*	*Amount of Credit*
May 17	6¾ dozen eggs	$0.97½
Sept. 6	5¾ dozen eggs	.82
Oct. 22	3¾ pounds of wool	1.40
Oct. 22	7½ bushels of potatoes	6.00
Nov. 13	5½ gallons molasses	11.00
Dec. 2	20 bushels of wheat	40.00
Dec. 10	4 bushels of corn	6.00
Dec. 28	3 chickens	.37
	Total	$66.56½

[10] During most of the period 1863–1900 tithing offices were located in the following Cache Valley settlements: Avon, Benson, Clarkston, Hyde Park, Hyrum, Lewiston, Logan, Mendon, Millville, Newton, Paradise, Providence, Richmond, Smithfield, Trenton, and Wellsville.

[11] "Tithing Square" was located in the center of the town, immediately north of "Tabernacle Square," and occupied more than two acres. The tithing yard was 18 by 27 rods, and ran from the corner of Main Street and First North Street east to Church Avenue, north to Federal Street, and west to Main Street. The tithing office also had haystacks north of Federal Street in the approximate present location of the Logan U. S. Post Office. Tithing Square was surrounded by a thick rock wall, approximately six feet in height, built in the early 1860's of cobblestone, and faced with cement. On the south side of the lot, on the site of the present Cache Stakehouse, was the tithing office and store — a low adobe building with several compartments. Back of it were the various facilities for handling tithing — grain bins, a barn and stock shed, a corral and feed lot, hay stacks, root cellars, tool shed, and workshop.

[12] The clerks of the Cache Valley tithing office, from 1863 to 1900, included George L. Farrell, James A. Leishman, L. R. Martineau, Isaac Smith, and Joseph E. Wilson. The activities of the office were under the general supervision of William B. Preston, the Presiding Bishop of Cache Valley until 1886, when he was appointed Presiding Bishop of the Church. After 1886 the work was under the direction of the Cache Stake President.

[13] Hyrum Tithing Day Book, 1872, p. 143, Cache Stakehouse vault.

Some of the accounts are much more complex, showing credits for items delivered to the tithing house well in excess of their tithing obligations, with a considerable number of debits indicating periodic withdrawals "in kind" from the storehouse. A balance was typically struck on December 31 of each year in a transaction known as "tithing settlement." Each tithepayer was asked to report to the bishop and the tithing office clerk for an examination of his credits and debits. His net credit balance was compared with his production during the year, and if his net credits did not amount to a full 10 per cent of his annual increase for the year, he would then indicate the manner in which he would make up the deficit. If his net credit was more than his yearly tithing obligation, he would receive a credit for "overpayment," and pay correspondingly less the next year. The tithing settlement procedure is illustrated by notations made on December 31 of a certain year of the account of another early settler of Hyrum: [14]

Tithing he should pay		*Tithing he did pay*	
Oats	$ 3.00	Oats	$ 1.25
Potatoes	10.25	Potatoes	10.50
Vegetables	1.65	Vegetables	1.05
Chickens	.25	Chickens	.25
Pork	7.65	Pork	7.62
Wheat	28.00	Wheat	28.00
Labor	48.00	Labor	29.00
Corn	2.09	Butter	1.00
Total	$100.89	Hay	9.60
		Wolf skin	5.25
		Cash	1.00
		Credit (evidently for overpayment of previous year)	25.85
		Total	$122.37 [$120.37]

When all of the individual tithing accounts in each branch or ward, as settled at the end of the year, were compiled by the local bishop or presiding elder, the totals were then forwarded to the tithing office in Logan which, in turn, forwarded the Cache Valley totals to the General Tithing Office in Salt Lake City.

Analysis of Tithing Office Receipts

The collective total or recapitulation of all tithing receipts in Cache Valley, as reported by the Logan tithing office, for the period 1863 to 1900, is shown in Table 1 (pp. 30–31).

[14] From the tithing record of Ira Allen published in *Ira Allen: Founder of Hyrum*, compiled by his grandson, Alvin Allen [Logan, Utah, 1941?], 33.

Total tithing receipts in Cache Valley during the period 1863–1900, according to the information found in the tithing office archives, were $2,613,081, which was an average of $68,765 per year. This total consisted of $335,165 in cash, $403,409 in labor, $832,409 in wheat, $333,594 in livestock, dairy, and poultry products, and $708,504 in miscellaneous products. This tithing was paid by an average of 2,533 tithepayers per year, each of whom paid, on the average, $29.58 in tithing per year. This $29.58 average tithe throughout the period was made up as follows: $3.79 in cash (12.8 per cent), $4.60 in labor (15.4 per cent), $9.44 in wheat (31.9 per cent), $3.76 in livestock, dairy, and poultry products (12.7 per cent), and $7.99 in miscellaneous products (27.2 per cent). Total nontithing receipts from 1863 to 1900 were $148,851, which was an average of $3,917 per year. Total receipts of all kinds, tithing and nontithing, were $2,761,932, of which 95 per cent consisted of tithing donations, and 5 per cent of other receipts.

One of the values of the tithing data is the indication it provides of production and income changes in Cache Valley during the period for which records are available. While one might not be justified in multiplying total yearly tithing receipts by ten (plus an allowance for nontithepayers and non-Mormons) to obtain accurate figures on production, the secular and cyclical variations in tithing payments are significant. With regard to the secular trend, it is to be noted that average tithes per person dropped, especially after 1872. Average tithing receipts in the 1860's were $37.43; in the 1870's, $36.58; in the 1880's, $28.21; and in the 1890's, $20.31. Since there is no reason to believe that tithepayers were less faithful in interpreting their tithing obligations in later years than in former years, it appears likely that there was a secular drop in per capita net incomes among Cache Valley residents after 1872. This trend culminated in abnormally low average money incomes in the middle nineties. This conforms rather closely to the drop in the national wholesale price level from an index of 84 in 1872 to 46 in 1896;[15] but whereas the physical volume of output of the nation was rising

[15] U.S. Bureau of the Census, *Historical Statistics of the United States, 1789–1945* (Washington, 1949), Series L 15–25, p. 234. See also Robert F. Martin, *National Income in the United States 1799–1938*: National Industrial Conference Board Studies Number 241 (New York, 1939), and F. A. Shannon, *The Farmers' Last Frontier: Agriculture, 1860–1897* (New York, 1945). It is to be noted that tithing values were higher in periods of scarcity and lower in periods of abundance. Thus, the amount of tithing reported for each year underestimates production declines in poor years and production increases in good years. In 1867, for example, despite the grasshopper destruction of grain crops, tithing wheat contributions appear to be almost normal because of the high price.

TABLE 1

Tithing and Other Receipts of the Cache Valley Tithing Office, 1863–1900

(In Rounded Dollars)

Year	Number of Tithe-payers [a]	Total Tithing Receipts	Average Tithing Receipts Per Person [b]	Value of Tithing Receipts by Principal Types [c]				Total Non-Tithing Receipts [h]
				Cash [d]	Labor [e]	Wheat [f]	Livestock Dairy and Poultry Products [g]	
1863	—	52,241	—	827	21,583	12,149	5,128	3,348
1864	1,225	57,962	47.32	571	17,732	20,275	4,675	4,739
1865	1,385	52,581	37.96	751	10,998	20,516	4,780	2,178
1866	1,490	74,011	49.67	789	21,096	27,846	6,043	4,164
1867	1,493	35,065	23.49	223	79	22,747	664	1,249
1868	1,552	60,104	38.73	5,586	17,003	20,083	4,646	17,856
1869	1,497	41,051	27.42	1,773	12,322	5,638	5,523	6,647
1870	1,479	55,717	37.67	1,266	12,669	14,868	6,369	4,778
1871	1,486	57,502	38.69	1,291	10,435	22,181	7,433	6,383
1872	1,675	90,907	54.27	2,372	17,447	39,989	8,887	5,131
1873	1,818	76,941	42.32	2,397	20,440	16,134	12,090	5,218
1874	1,762	64,186	36.40	2,930	16,366	11,610	11,134	2,427
1875	(1,802)	62,211	(34.52)	2,531	12,698	15,383	10,819	6,131
1876	1,842	63,883	34.68	2,408	14,286	15,625	11,571	9,221
1877	(2,034)	53,387	(26.25)	3,168	14,910	7,621	11,453	7,284
1878	2,325	74,495	32.04	4,661	13,847	28,660	9,181	6,108
1879	2,493	65,593	29.00	6,927	14,016	19,807	9,728	2,334
1880	2,750	72,474	27.24	7,950	14,709	23,062	7,848	2,904
1881	3,084	96,856	31.40	16,551	17,774	30,805	8,414	3,853
1882	(3,166)	94,307	(29.79)	18,365	16,953	23,810	8,480	1,468
1883	3,248	102,903	31.68	14,365	18,691	27,520	10,232	1,014
1884	2,781	80,666	29.00	9,126	15,284	27,995	7,580	4,675
1885	2,854	86,870	30.43	8,421	11,058	36,605	7,371	7,376
1886	2,818	68,716	24.96	9,053	8,990	22,322	8,404	2,880
1887	2,742	70,655	25.76	9,259	8,981	25,061	7,758	313
1888	2,953	75,034	25.41	9,565	8,646	21,832	9,423	377

Year	Number of Tithepayers [a]	Total Tithing Receipts	Average Tithing Receipts Per Person [b]	Value of Tithing Receipts by Principal Types [c]				Total Non-Tithing Receipts [h]
				Cash [d]	Labor [e]	Wheat [f]	Livestock Dairy and Poultry Products [g]	
1889	(3,023)	79,769	(26.39)	13,462	5,117	34,033	12,084	3,707
1890	3,092	85,050	26.62	17,923	5,406	31,256	13,069	4,893
1891	3,040	70,622	23.15	14,434	3,778	28,084	10,463	1,604
1892	3,029	69,466	22.90	16,180	3,031	28,842	8,742	3,137
1893	2,964	54,108	18.26	10,277	2,988	11,500	11,861	3,026
1894	3,299	59,925	18.16	10,335	2,928	16,794	12,286	3,082
1895	3,283	57,584	17.53	9,293	3,193	17,661	10,004	277
1896	3,215	61,466	19.11	11,198	2,322	20,845	10,519	3,795
1897	3,247	64,153	19.75	12,708	2,263	20,497	10,101	207
1898	3,327	69,201	20.80	15,021	1,680	27,179	8,301	414
1899	4,253	71,675	16.85	24,726	1,003	17,841	10,079	3,822
1900	4,405	83,744	19.01	36,482	687	17,733	10,451	829
Totals	—	2,613,081	—	335,165	403,409	832,409	333,594	148,851
Yearly Average	2,533	68,765	29.58	8,820	10,616	21,906	8,779	3,917

[a] The number of tithepayers was partly variable because of changes in ecclesiastical boundary lines. The figures in parentheses, which were not in the original data, are supplied by averaging the number of tithepayers during the years preceding and succeeding.

[b] Average tithing receipts is calculated by dividing total tithing receipts by the number of tithepayers. The figures in parentheses are calculated from the interpolated number of tithepayers.

[c] Cache Valley tithing receipts were in countless different forms. The most important types of receipts, value-wise, were cash, labor, wheat, livestock, and dairy and poultry products. The most important items throughout the period which are not listed were oats (before 1884, after which it was included in the wheat figure), vegetables (before 1889, after which it was combined with butter), hay (except 1889–92, when it was combined with wheat), and merchandise or "store goods" of all types, especially in the 1880's and 1890's.

[d] Cash includes territorial currency, U. S. currency, coin, and gold dust.

[e] Labor includes team labor and wood as well as individual labor. The great majority of the labor before 1869 was credited as donations to the Perpetual Emigrating Fund and repayments on indebtedness to that Fund.

[f] Beginning in 1884, wheat includes all grains. Wheat includes hay as well as other grains during the years 1889–92.

[g] In the original recapitulations of the tithing office clerk, livestock tithing was listed separately from dairy and poultry produce tithing. Here they are combined. The relative amounts contributed in the form of livestock and dairy produce were about equal until after 1889 when the absolute decline in livestock contributions and the inclusion of vegetables in the dairy and poultry contribution caused the latter to rise in relation to livestock receipts.

[h] Receipts of the Cache Valley tithing office other than tithing were originally listed under three headings: Profits in handling, donations and repayments to the Perpetual Emigrating Fund, and miscellaneous current receipts. The latter included receipts from the General Tithing Office in Salt Lake City.

SOURCE: Cache Valley Ward Tithing Ledger, 1860–1886, *passim*; and Cache Valley Stake Tithing Ledger, 1887–1900, *passim*. These account books are found in the vault of the Cache Stakehouse, Logan, Utah. [I am grateful to Dr. S. George Ellsworth, Utah Agricultural College, for assisting me in obtaining this data.] Beginning in 1859, Cache Valley was the equivalent of an ecclesiastical ward, or parish, with several "branches" or districts. In 1877, it became the Cache or Cache Valley "Stake of Zion," and included substantially the same settlements as those which had previously been the branches of the Cache Valley Ward.

more than the decline in wholesale prices (and also than the population increase), thus permitting a rising scale of per capita income, this apparently was not true in Cache Valley which was relatively untouched by the growing industrialization of the nation. After railroad connections had been established in 1871 (via the Utah Northern Railroad), Cache Valley depended principally for its monetary income upon the commercialized production of wheat, butter, dried peaches, and similar exportable agricultural products. The drop in the prices of these and other agricultural products, nationally as well as locally, was even greater than the decline in the general price level. Thus, while the population of Cache Valley was doubling from 1873 to 1896, the value of agricultural production did not increase commensurately. The deteriorating man-land ratio which is evidenced by the decline in per capita tithing in Cache Valley, particularly in the late 1880's and 1890's, seems to have been general throughout Utah and was the object of grave concern to Mormon leaders.

The cyclical changes in Cache Valley income, as reflected in the tithing data, are also of considerable interest. While some similarities to the national pattern can be discovered, the Cache Valley pattern seems to have been deflected from the national pattern, particularly before 1871, by such regional factors as the initiation of mining activity in surrounding areas (1866), grasshopper visitations (1867, 1869), lucrative railroad contracts (1868), and federal prosecution (1885–1890). The exceptionally high tithes, comparatively speaking, of 1872 are apparently due to a combination of a good harvest, the completion of railroad connections, good prices for wheat and dairy product exports, and the development of a superior organizational device called the Cache Valley Board of Trade, which purchased large quantities of wheat and other products and shipped them to San Francisco at favorable prices. The effectiveness of regional church programs and policies in the 1870's,[16] and perhaps other regional and local factors, help to explain why the national panic of 1873 did not affect Cache Valley, and perhaps other parts of Utah, as seriously as it might otherwise have done. Tithing payments were not below "normal" from 1873 to 1876. Although there were a number of antidepression programs adopted by the church in the 1890's, most of these were calculated to benefit the areas

[16] One such program of paramount importance was the institution, in every community, of a "United Order," which provided for the mobilization of Mormon labor and capital, under ecclesiastical direction, for the stimulation of investment and the diminution of "imports."

around Salt Lake City, Ogden, and Provo, and thus there was no local offset to the Cleveland depression resembling that of twenty years before.

If all members of the church paid as much tithing as did Cache Valley members, church revenues in the nineteenth century were far greater than has been supposed. If the number of tithepayers in Cache County in relation to the census population – roughly 20 per cent throughout the period – was fairly representative of the entire territory, there must have been at least 15,000 tithepayers in Utah alone in 1870. If their tithing averaged as much as in Cache Valley, making due allowance for the relative numbers of non-Mormons, total church tithing receipts, in 1870, would have exceeded half a million dollars. Similarly calculated, they would have approached $700,000 in 1880. That total individual tithing receipts for the entire church in 1879 were only approximately $460,000, according to official figures, would indicate that Cache Valley income was higher than the average. However, if the proportion of cash tithings paid by Cache Valley members was typical, total church tithing receipts in cash must not have been more than $10,000 in the 1860's (with the exception of 1868 when they were certainly much more). In the 1870's church tithing in cash probably equaled thirty or forty thousand dollars, while it may have been as much as one hundred thousand dollars yearly in the 1880's and 1890's.

Cash Tithing

The transition from a barter economy to a money economy, not yet complete at the turn of the century, is manifested by the upward trend in cash tithing, which advanced from less than $1,000 per year (1.3 per cent of the total) in the early 1860's to more than $20,000 per year (34 per cent of the total) in the late 1890's.[17] The large jump from $223 cash tithing in 1867 (a "grasshopper year") to $5,586 the next year is attributable to the large amount of cash received in 1868 by Cache Valley residents for work done on the transcontinental railroad, for which they were paid largely in cash. The relative declines in cash tithing during the period 1884–88 are largely the result of the enforcement of the Edmunds Act,[18] which

[17] Cash tithing averaged 3 per cent of total tithing receipts in the 1860's, 4 per cent in the 1870's, 14 per cent in the 1880's, and 21 per cent in the 1890's.

[18] 22 Stat. L. 30 (1882). The Edmunds Act legislated against plural marriage, declared "cohabitation" with a plural wife a misdemeanor, disqualified professing Mormons from jury service, disfranchised a large proportion of the

forced most of the large income-earners into hiding or into jail and made it necessary for families to save their cash for use in hiring defense attorneys, paying fines, etc. The other decline in cash tithing, beginning in 1893 and lasting until 1899, was, of course, due to the monetary stringency induced by the Cleveland depression. It is of some interest to note several instances in which, as total tithing fell, cash tithing fell proportionately more; and as total tithing payments increased, cash tithing rose more than commensurately.

Labor Tithing

The counterpart of the relative increase in cash tithing was the gradual but notable decline in labor tithing. From a high of $21,583, or 41 per cent, of total tithing payments in 1863, labor tithing sank to a low of $687, or less than 1 per cent, of all payments in 1900.[19] Much of the labor tithing before 1869 consisted of services rendered in behalf of and repayments to the Perpetual Emigrating Fund, which assisted poor converts to migrate to Utah. This consisted partly of trips to the Missouri River to pick up immigrants bound for Utah (a labor which was unnecessary after the completion of the transcontinental railroad in 1869), and partly of services rendered for the church in Utah by immigrants who took that means of repaying their obligations to the P. E. F. Such work included construction of roads, railroads, canals, meetinghouses, and various types of work for the tithing office. During the 1870's and early 1880's most of the tithing labor in Cache Valley was devoted to work on the construction of the Logan Tabernacle and the Logan Temple, although some was contributed for such purposes as putting up hay and hauling wheat.[20] After the completion of the Logan Temple in 1884, labor tithing began to drop rapidly. However, the tithing office records do not reveal the amount of labor that may have been donated in later years for the completion of meetinghouses, repair of temple and tabernacle, etc., which was not credited to tithing.

Latter-day Saints, and set up an administrative commission to supervise elections. Most Mormon polygamists (and this included nearly all leaders) reacted to the law by going into hiding.

[19] Labor tithing averaged 27 per cent of all tithing receipts in the 1860's, 22 per cent in the 1870's, 16 per cent in the 1880's, and 4 per cent in the 1890's.

[20] In August, 1874, George A. Smith, a member of the church First Presidency, visited Logan to supervise the harvest of some 7,000 tons of hay on Brigham Young's farm seven miles west of Logan. The hay was put up by tithing labor and used to feed tithing cattle (Journal History of the Church, 21 Aug. 1874, Church Historian's Office, Salt Lake City).

Wheat Tithing

Wheat represented 35 per cent of all tithing receipts in the 1860's and 33 per cent in the 1890's. One can see the beginning of a decline in the proportion of wheat donations in 1900 when only 20 per cent of the local tithing take was in wheat. The largest wheat donation was in 1872 when approximately $40,000 was received by the tithing office in that commodity. Just three years previously, as the result of a poor crop, only slightly more than $5,000 in wheat was delivered as tithing. When one considers that wheat averaged slightly less than $2.00 per bushel in pioneer Utah, it is clear that Cache Valley residents contributed almost half a million bushels of wheat to their church as tithing in the thirty-eight-year period. The disposal of this wheat must have been a major preoccupation of tithing office employees.

Livestock and Produce Tithing

The peak in livestock, dairy, and poultry product contributions was in 1872, when more than $12,000 was contributed in this form.[21] There was a decline after 1872, particularly in the livestock constituent. The drop in livestock (largely beef) beginning in 1884 and again in the 1890's furnishes evidence of the effect on Utah of trends in the national cattle market which was on the decline. Although Cache Valley is now the principal dairy-producing center in Utah, with an agricultural income made up dominantly of returns from dairy products, this was apparently not true in the last century. It seems clear from the tithing data that Cache Valley was still primarily a wheat producer at the turn of the century.

Other Tithing Receipts

Other trends in Cache Valley tithing, not revealed in this table, include rather constant emphasis on hay tithing, running between 5 and 10 per cent of the total, which, surprisingly enough, did not decline in the later years. After the completion of the Utah Northern Railroad in the 1870's, and the advent of an extensive export-import trade, merchandise or "store goods" began to appear among the types of goods brought to the tithing office. Beginning in 1889, merchandise donations began to exceed 10 per cent of total tithing receipts, and were classified under such headings as store credits and scrip, domestic and "foreign" goods, machinery, furniture,

[21] The larger amounts in the 1890's are due to the inclusion of vegetable tithing.

vehicles, etc. Merchandise contributions dropped during the depression of the 1890's, but began to rise again after 1900.

Other Receipts of the Tithing Office

The great bulk of the receipts of the tithing office (an average of 95 per cent) consisted of tithing contributions. The remaining 5 per cent of the receipts included three types: profits in handling, donations and repayments to the Perpetual Emigrating Fund, and miscellaneous current receipts. The total of these nontithing receipts, during the thirty-eight-year period, amounted to $148,851, or an average of $3,917 per year. Of this amount, profits in handling amounted to $17,602, donations and repayments to the P. E. F. were $18,937, and miscellaneous receipts totaled $112,312. Profits in handling and P. E. F. contributions were not separately tabulated until the year 1869, and are consequently included for the years 1863–68 in the total of miscellaneous receipts.

Profits in handling consisted primarily of appreciation in values of tithing stock and produce, and natural increase (in the case of livestock). There were seven years in which no profits in handling were recorded, and the small average (only $568 per year) indicates that no attempt was made by the tithing office to reap a monetary profit from its operations.

The Perpetual Emigrating Fund was an agency of the Mormon Church established for the purpose of assisting poor European and American emigrants to come to Utah. During the years of its existence, 1849 to 1887, this organization expended more than $10,000,000 in assisting upwards of 40,000 emigrants bound for the Latter-day Zion. Each emigrant who was brought to Utah under this program was asked to pledge that he would eventually repay, in cash, commodities, or labor, the cost of the transportation and provisions provided him and his family. Apparently, the tithing offices handled P. E. F. donations and repayments much as tithings were handled. Until 1869, there was no separate recapitulation of P. E. F. contributions, and it would appear that such contributions were listed as tithing. It is evident that the bulk of the labor tithing before 1869 was in the form of donations and repayments to the P. E. F. Even after 1869, however, it seems incredible that the total should have been so small — less than $19,000 between 1869 and 1879, and less than $27 in the 1880's! It is possible, of course, that some donations to the Perpetual Emigrating Fund were made outside the mechanism of the tithing offices during these years, and that the tithing office data comprise only a part of the whole. Whatever the total amount

of Cache Valley contributions to the Emigrating Fund, the tithing office accounts clearly show that the donations and payments were almost entirely in kind. More than 40 per cent were in the form of labor, 30 per cent in livestock, 15 per cent in grain, and the remaining 15 per cent in cash, merchandise, and produce of various types. The Cache Valley tithing office disposed of these contributions, as it did tithing receipts, upon the order of the General Tithing Office in Salt Lake City which, in turn, disposed of them according to the order of the trustee-in-trust, who was also president of the Perpetual Emigrating Fund Company.

Miscellaneous receipts included rentals and fees on the use of tithing office facilities and equipment (scales, hayracks, mowing machines, threshing machines, etc.), special offerings to the poor, and receipts from the General Tithing Office. Separate accounts were not kept for each of these three types of current receipts. The receipts from Salt Lake City, for example, are not found in the recapitulations except for the year 1884 when they were $4,258, or 100 per cent of all miscellaneous receipts. In other years, receipts from Salt Lake City were apparently not inconsiderable, running from $1,000 to $5,000 per year throughout the period. An examination of the account would indicate, however, that there was no conscious countercyclical action in these relatively small expenditures of the General Tithing Office.

Pricing of Tithing Donations

One of the problems involved in receiving and administering tithing revenues was the establishment of the values or prices of the goods and services to be received. This must have been a major preoccupation of the Presiding Bishop, who would distribute tithing price lists to the various tithing houses in the territory several times a year. These prices tended to become "official" prices for trading in the private sector of economy. No seller wished to accept less than tithing prices; no buyer wished to pay more. This pricing function, somewhat analogous to government fixation of the prices at which it will accept gold and silver, was especially important before 1869, when Utah was isolated from the economy of the States and eastern trading values had small effect. During that period, market prices probably followed tithing prices except in the case of extreme fluctuations in supply or demand as in "grasshopper" years or the years of railway construction. After the coming of the railroad, market trading values began to compete for dom-

inance with official tithing prices. The latter were increasingly adjusted to market prices, changing, however, with less frequency and amplitude.[22] The nature of the adjustments required at the end of the century is exemplified and explained in the query made in the following letter from the Cache Valley tithing office clerk to the Presiding Bishop in December, 1896: [23]

Dear Brother: —

Upon receipt of your letter of August 20th [1896], we placed the price of wheat for tithing credit at 50 cents a bushel. But not a great while thereafter the market advanced until, as you know, the price is higher than for many years. As the market price advanced we advanced with it, and are now receipting it at 70 cents. But during the fluctuation, we disbursed at 50, 55, or 60 and so on, paying 2000 bushels to the Brigham Young College [in Logan] at 60, on a/c one of your orders. We have also shipped flour to your office at the low prices.

Now the bishops come along and want to know what they shall allow for wheat, saying that they took it in promising the people credit at whatever the market justified at the time of settlement at the close of the year. It is now worth 70, and may go to 75 by Dec. 31.

I have talked with Pres't Orson Smith about the matter, and he says that owing to the violent fluctuations in the price, and on account of having to disburse at different prices, he thinks we ought to allow the full current market price at the time it is brought in, and disburse accordingly; as the tithepayer owes bushels and not so many dollars worth of wheat. But that being an innovation in the policy of the past, it is for you to determine. It does seem to be the only correct thing to do however, especially since it is done in all other kinds of tithing without exception. That a few would hold their wheat and not pay until prices would give them a larger credit for a given number of bushels, is no doubt true; but the law, viz; *one tenth in kind*, would influence the great majority, in our opinion. . . .

By 1896, in other words, the tithing office was forced, for all practical purposes, to abandon its own independent pricing practices. Nevertheless, throughout the entire pioneer period, there can be little doubt that the tithing price lists imparted an uncommon stability to the market prices of Utah's expanding economy.

The relative prices set by the tithing office had an influence on resource development and on the distribution of income in Utah, as well as on the amount and nature of contributions to the tithing offices. If, say, hay prices were set at a low price in relation to livestock, farmers would tend to feed their hay and pay their tithing in

[22] If the records of the Presiding Bishop's office were made available, an interesting study could be made of the interrelationships between tithing office prices and market prices during the pioneer period. Such a study might furnish information as to the probable effects of certain types of government price-fixing.

[23] Letter Book of L. R. Martineau, p. 482 (paragraphing supplied).

stock. The tithing office would then have to buy hay for its herds on the open market. Similarly, if the price of labor was set at a relatively high level, churchmen would be encouraged to render much of their tithing in labor. At the same time, however, the church's payroll to its hired help would correspondingly rise.

Whether the Presiding Bishop and the various local officials purposefully manipulated tithing office prices to control the types and amounts of tithing brought to the storehouses, is difficult to determine. The Western historian, Hubert Howe Bancroft, cites a complaint published in the *Deseret News* of 10 January 1852, alleging that private merchants were paying 33 per cent more for butter than the tithing house price. As the result, the Saints were not turning in butter on tithing, and church public works employees were thus forced to eat their bread without butter.[24] During the winter of 1877–78 coal and wood were in short supply in Salt Lake City, and none was coming into the tithing house. The church decided, therefore, to raise the tithing office price from $8.00 per cord of wood and per ton of coal, to $10 for the same articles.[25] During the depression of the 1890's the Cache Valley office, under instructions from the Presiding Bishop, discouraged horse tithes by fixing low official prices for horseflesh. "Horses are so low," Cache Valley bishops were told in 1894, "that we cannot suggest any price whatever further than to say that the Presiding Bishop has instructed us to allow but very low prices for average horses, and not to receive old or unsound animals at all. We can't afford to feed $5.00 worth of hay to a $1.00 horse." [26] Later, the office reported to the Presiding Bishop: "A great source of expense to us for the past two years is our large band of horses [contributed in prior years] which we see no hope of selling." [27]

There is some evidence to indicate that tithing office prices were usually a little higher than market prices.[28] This would seem to have

[24] H. H. Bancroft, *History of Utah, 1540–1886* (San Francisco, 1889), 350 n. 15.

[25] From the minutes of a meeting of the Salt Lake bishops, Journal History, 27 Dec. 1877. This reference does not specifically give the shortage as the reason for raising the tithing price, but such may be fairly assumed.

[26] Letter Book of L. R. Martineau, p. 142; see also pp. 107, 306, 346, 440.

[27] *Ibid.*, p. 222.

[28] Brigham Young's successor, John Taylor, told a meeting of bishops in 1878 that the Council of the Twelve Apostles "hoped to raise the standing of tithing institutions to one of strict reliability," by reducing the price of flour to $3.00 per hundred, by reducing tithing office prices of coal and cloth to the market level, and by other procedures (Minutes of the bishop's meeting, Journal History, March 7, 8, 1878). In August, 1895, the Cache Valley tithing office clerk wrote the Presiding Bishop for instructions with regard to the price

been a reasonable course for church authorities to pursue. It provided an incentive to church members to bring goods to the tithing office; and it tended to eliminate the argumentation and criticism that might have resulted if contributors thought they were not being given sufficient credit for their donations. Some critics also saw in it a move to depress the wages of church employees, by charging higher than market prices for the products they bought with their orders on the tithing office.

Analysis of Tithing Disbursements

What happened to tithing office receipts of cash, labor, grain, livestock, dairy and poultry products, and other donations and contributions? How were they disbursed? And to whom? So far as the Cache Valley tithing office is concerned, its disbursements are shown by Table 2 (pp. 42–43).

Total disbursements of the Cache Valley tithing office during the period 1863 to 1900 were $2,745,317, which was only about $15,000 less than the $2,761,932 tithing office receipts during the same period. Of total disbursements, $1,952,892, or 71 per cent, were sent to the General Tithing Office, or otherwise disbursed on their order, and $792,425, or 20 per cent, were disbursed locally on the order of local church officials.

A year-by-year comparison of total disbursements with tithing receipts indicates no pattern of countercyclical action, at least at the level of the Cache Valley office.[29] Even local disbursements show no definite countercyclical pattern. They vary from a low of less than $6,000 in 1879 to a high of $44,000 in 1887, but these differences appear to be partly a shifting in the relative cost responsibilities of the valley tithing office and the General Tithing Office, and partly the bunching of capital purchases of tithing office facilities in certain years. The large increase in disbursements in 1881, from approximately $70,000 per year, to about $110,000 per year, was due to a special order from the trustee-in-trust of the church to centralize money operations under the trustee-in-trust. This is reflected in the increase in tithing sent to Salt Lake, especially cash, in 1881.

---

at which wheat tithing should be received. He stated that the Logan office had always allowed "5 to 10¢ pr. bus. more than the *Store-market* price" (Letter Book of L. R. Martineau, p. 306). Cattle were credited at from $1.00 to $2.00 per 100 pounds more than the market price (*ibid.*, p. 346).

[29] The disbursements of the General Tithing Office, of course, may have been consciously countercyclical, but the detailed year-by-year records of that office are not available.

Local disbursements were of four types: expenditure on behalf of the poor, the Indians, sundries, and losses. Sundries and losses are combined in Table 2.

Disbursements to the Poor

The Mormon program of assisting the poor did not include much "poor relief." "True charity to a poor family or person," said the First Presidency in 1854, "consists in placing them in a situation in which they can support themselves."[30] Or, to use the words of a later official declaration, "let us bestow our charity, not so much to feed the hungry and clothe the naked, as to cause them to feed and clothe themselves. . . ."[31] Nevertheless, local disbursements to the poor in Cache Valley, during the period 1863–87, were $43,526, or an average of $1,741 per year.[32] Some disbursements to the poor were also made by the G. T. O. during this period, and from 1888 to 1900 all poor assistance was subject to the orders of the Presiding Bishop's office in Salt Lake City, and appears to have averaged more than $6,000 per year.[33]

In general, tithing office poor assistance was granted to widows, the aged, and the infirm. All local tithing offices had a "Poor Account." The following extract from the Hyrum Tithing Office Poor Account, of 1868, is indicative of the form in which the accounts were kept and the nature of the assistance given:[34]

Date	*Item*	*Value*	*Recipient*
Oct. 17	1,000 pounds hay	$4.00	An elderly man
Oct. 19	6 bushels potatoes	4.50	A widow
Oct. 19	1 load of wood	3.00	An elderly man
Nov. 20	42 pounds beef @ 8¢	3.35	A widow
Dec. 11	7½ pounds of pork	1.12	A crippled man
Dec. 31	1 load of wood	3.00	Wife of a missionary who was away from home
Dec. 31	8 gallons of molasses	16.00	An elderly woman
Dec. 31	2 pounds of butter	.50	A widow

[30] "Eleventh Epistle of the First Presidency," Journal History, 10 April 1854.
[31] "Fourteenth Epistle of the First Presidency," Journal History, 10 Dec. 1856.
[32] This is based upon the assumption that local disbursements to the Indians were $1,000 per year during the years 1869–74, and $500 per year during the years 1875–81.
[33] Disbursements to the poor in Cache Valley were $6,402 in 1891, $6,144 in 1892, $6,272 in 1893, $6,151 in 1894, and $4,590 in 1895 (Letter Book of L. R. Martineau, pp. 260, 280).
[34] Hyrum Tithing Day Book, July 15, 1868–1871, pp. 343–6, Cache Stakehouse vault. The present writer has deleted the names of the recipients and inserted the descriptions of them given in the table.

TABLE 2

Disbursements of Cache Valley Tithing Office, 1863–1900

(In Rounded Dollars)

Year	Total Disbursements	Local Disbursements			Deliveries to General Tithing Office or Disbursed on their Order		
		The Poor [a]	Indians [b]	Sundries and Losses [c]	Total [d]	Cash	Wheat [e]
1863	73,079	346	454	8,855	63,424	1,090	20,158
1864	58,612	757	726	9,189	48,697	1,249	16,559
1865	39,188	895	672	10,286	27,335	781	13,555
1866	79,278	1,281	1,749	14,830	61,418	982	21,811
1867	60,682	2,197	1,539	15,064	41,882	1,135	26,218
1868	59,837	845	522	17,862	40,608	1,703	5,416
1869	57,448	2,569		19,101	35,778	5,719	18,970
1870	53,084	3,392		22,686	27,006	793	12,431
1871	56,650	3,360		27,078	26,212	1,266	9,981
1872	52,170	2,748		20,597	28,825	1,512	12,315
1873	126,689	3,600		33,620	89,469	2,920	40,648
1874	74,050	3,332		20,014	50,704	1,574	9,742
1875	61,838	2,713		18,278	40,847	2,653	8,699
1876	66,913	2,537		21,097	43,279	2,292	9,345
1877	71,045	3,880		20,582	46,583	1,779	10,308
1878	46,513	1,591		4,854	40,068	1,679	7,171
1879	64,479	2,104		3,603	58,772	5,252	16,179
1880	69,638	3,159		3,032	63,447	4,625	22,356
1881	109,250	1,809		3,226	104,215	23,623	29,775
1882	81,168	2,526	17	24,955	53,670	11,830	14,952
1883	124,302	—	153	34,867	89,282	18,298	32,025
1884	92,812	174	199	23,921	68,518	6,433	26,409
1885	81,962	581	209	25,551	55,621	4,873	19,959
1886	83,120	477	30	23,343	59,270	7,957	18,821
1887	64,113	6,153	152	37,736	20,072	991	10,241
1888	87,847	—	122	28,080	59,645	1,916	12,418
1889	74,701	—	—	24,822	49,879	2,311	5,010

Year	Total Disbursements	Local Disbursements			Deliveries to General Tithing Office or Disbursed on their Order		
		The Poor [a]	Indians [b]	Sundries and Losses [c]	Total [d]	Cash	Wheat [e]
1890	85,203	—	—	23,760	61,443	10,353	6,235
1891	74,161	—	—	22,548	51,613	16,407	6,795
1892	70,956	—	—	22,800	48,156	12,469	7,445
1893	59,883	—	—	22,607	37,276	4,935	3,594
1894	58,267	—	—	19,470	38,797	6,391	1,889
1895	64,770	—	—	22,598	42,172	5,872	2,833
1896	56,747	—	—	18,191	38,556	6,215	6,741
1897	71,745	—	—	16,648	55,097	10,555	4,665
1898	72,237	—	—	16,809	55,428	12,762	6,174
1899	82,863	—	—	15,999	66,864	29,022	4,155
1900	78,017	—	—	15,053	62,964	40,467	4,026
Totals	2,745,317	43,526	16,044	733,612	1,952,892	272,684	506,024
Yearly Average	72,246	1,741	616	19,306	51,392	7,176	13,317

[a] It will be noticed that the Poor Account is combined with the Indian Account for the years 1869 to 1881, inclusive. The Poor Account, as an item of local disbursement, ceases with the year 1887. From 1888 to 1900, all expenditures on behalf of the poor were subject to the order of the trustee-in-trust or the Presiding Bishop's Office in Salt Lake City.

[b] The Indian Account, as an object of local expenditure, ceased with the year 1888. All expenditures on behalf of Indians after that date were made through the trustee-in-trust or the Presiding Bishop's Office.

[c] Beginning in 1869 the sundries column was entitled "local disbursements." After 1879 "local disbursements" is listed under the headings "paid bishop and clerks and agents," "paid for buildings, improvements, etc.," and "all other local disbursements." Whatever the title, it referred to expenditures incurred in the receiving, handling, and disbursing of tithing revenues. It included the salary of the tithing office clerks, cost of equipment and facilities, labor, etc. It seems evident that part of this administrative expense was borne by the General Tithing Office during the years 1879–81, inclusive. The losses included shrinkage, spoilage, breakage, livestock deaths, losses *en route*, and stolen property.

[d] For the years 1888–89 deliveries to the General Tithing Office are divided into two accounts, one of which reads "forwarded as per General Tithing Office orders;" the other entitled "Presiding Bishop Office orders paid." Presumably, the former is what was actually sent to Salt Lake City; the latter was spent locally, on behalf of the poor, the Indians, construction, etc., but on the orders of the Salt Lake office. From 1890 to 1900 the column is broken down into three columns: "Forwarded to Bishop's General Storehouse (General Tithing Office), and Trustee-in-trust," "P. B. O. orders paid – general," and "P. B. O. orders paid – local." The distinction in the latter two is not clear since both were spent locally. Perhaps the former was spent locally but for general church purposes, while the latter was spent for local church purposes.

[e] The wheat column includes all grains beginning in 1883. It also includes hay, as well as grain, during the years 1889–93, inclusive.

SOURCE: Cache Valley Ward Tithing Ledger, 1860–1886, *passim*; and Cache Valley Stake Ledger, 1887–1900, *passim*; both in Cache Stakehouse vault.

The accounts also show the payment of an occasional doctor bill. In general, tithing office poor assistance consisted of feed for livestock, flour, wood, and labor. The disbursements to the poor in 1863 by the Cache Valley tithing office, for example, were as follows: [35]

Item	*Value*
Barley, rye, buckwheat	$3.75
Butter, cheese, eggs	7.76
Corn	.37
Fruit, wines, vinegar	2.00
Home-made wool	4.40
Hay and fodder	38.50
Pork and pork products	10.00
Sugar and molasses	14.00
Salt and saleratus	4.40
Labor, team labor, wood	173.00
Vegetables	27.50
Wheat	59.93
Total	$345.61

An examination of the poor account through the years reveals, as one would expect, a gradual transformation from grants of commodities of all kinds in the earlier years to grants of store credits and cash in later years. Almost all of the poor relief granted in 1887 and thereafter, for example, consisted of fuel, grain, merchandise, and cash. In the earlier years, almost no poor relief was granted in cash.

It is also quite obvious, from the figures available, that most of the tithing aid to the poor was supplementary. It is doubtful if the recipients could have lived entirely off the relief granted. This would indicate that each had a home and garden, livestock, and poultry, and perhaps a patch of farming land. A cord of wood for the stove, a load of hay for the cow, some wheat for the bin, and a few tithing vegetables were sufficient to take care of their most urgent needs.

Disbursements to Indians

It is somewhat surprising to discover that local tithing offices made regular disbursements to visiting Indians. At least this was the case in Cache Valley. During the period 1863 to 1888 the Cache Valley tithing office expended $16,044 on behalf of the Indians, or an average of more than $600 per year. The amounts ranged from a high of $1,749.41, in 1866, to a low of $16.84 in 1882. An example

[35] Cache Valley Ward Tithing Ledger, 1860–1886, pp. 20–21.

of the nature of these disbursements is the following extract from the 1864 "Indian Account:" [36]

Date	*Item Disbursed*	*Value*
Apr. 15	104 lbs. flour to Sagwich	$6.25
Apr. 19	216 lbs. flour to Weber Jack	12.96
Apr. 19	1¾ lbs. butter to Weber Jack	.36
Apr. 19	1 plug tobacco to Weber Jack	1.00
May 2	50 lbs. flour to Indian George	3.00
June 18	55 lbs. flour to Indian John	3.30
July 5	102 lbs. flour to Indian Charles	6.12
July 23	500 lbs. flour to Indian Banacks	30.00
July 31	760 lbs. flour to Indian Washakie	45.60
Aug. 14	69 lbs. flour to Indian Washakie	4.14
Aug. 16	300 lbs. flour to Indian Madagin	18.00
Sept. 8	One beef ox per P. Maughan to Washakie	70.00
Oct. 7	One beef ox per W. Cowley to Washakie	55.00
Oct. 7	One beef ox per T. Tarbet to Washakie	35.00
Oct. 7	One beef steer per T. E. Ricks to Washakie	35.00
Oct. 7	116 lbs. beef to Sagwich	6.96
Nov. 24	5 bu. wheat ($10.00); 5 bu. corn ($7.50) to Sagwich	17.50
Nov. 24	10 bu. potatoes ($10.00); 10 bu. carrots ($5.00) to Sagwich	15.00
Nov. 24	1 bu. corn ($1.50); 5 bu. potatoes ($5.00) to Sagwich	6.50
Nov. 24	5 bu. carrots to Sagwich	2.50
	Total of this extract	$374.19

The bulk of the assistance rendered in 1864, as in most of the years, was in the form of flour and meat, though vegetables came to occupy a more important place in the account in later years. In some cases these gifts were intended for a considerable group of Indians. Parties of Snake and Bannock Indians, including a sizable community of "Washakie" tribesmen, received most of this aid. The accounts show that some Indians made an annual pilgrimage to Cache Valley, presumably for the express purpose of obtaining food from the tithing office. As regular as the spring, for example, were "Weber Jack's" visits to Cache Valley. The accounts also reveal Mormon faith in Indian friendliness with such items as "Fixin' gun for Indian George" and "Bullets for Indian Alma." In at least one instance, a local branch of the Cache Valley tithing office, at Franklin, Idaho, erected and maintained a wheat bin for the specific use of Indian visitors. The services of the tithing office may explain why no more than two Loganites, out of many thousands, were killed by Indians in Cache Valley. After 1888 all L. D. S. Indian appropria-

[36] Logan General Tithing Office Account Book B, 1864–65, pp. 12–13, Cache Stakehouse vault. This account was called to the writer's attention by Mr. Willis A. Dial, Logan, Utah.

tions were made by the Salt Lake office, and usually to church-maintained "Indian farms," one of which was established at Washakie, near Cache Valley

Sundries and Losses

These items representing disbursements of $733,612 during the thirty-eight-year period, or an average of a little less than $20,000 per year, were the costs involved in the administration of the tithing. Equipment, fixtures, and supplies for the tithing office and pay of tithing office help were the two most important sundry items. Losses, of course, included shrinkage, product deterioration and spoilage, breakage, livestock deaths, losses *en route*, and stolen property. The local bishop had the authority to use any amount of tithing in maintaining and handling the remainder, until 1879, after which he was restricted to an average of 10 per cent. The equipment purchased for the use of the tithing office indicates, in a measure, the magnitude of tithing office operations. For example, the tithing office report for 1873 shows the following "Office Furniture" on hand on 31 December 1873, with the values specified: [37]

Item	*Value*	*Item*	*Value*
1 map	$ 10.00	3 common shovels	$ 3.00
1 clock	7.00	4 steelyards	6.00
5 platform scales	300.00	1 lounge	8.00
12 counter scales	174.00	3 inkstands	2.50
4 beams scales	20.00	8 lamps	13.00
2 axes	1.00	2 candlesticks	.50
3 hayknives	4.50	6 pitchforks	6.00
5 bushel baskets	2.50	6 pork barrels	8.00
4 half-bushel baskets	6.00	5 stoves	75.00
25 butter kegs	50.00	1 wagon	150.00
4 desks	120.00	4 scoopshovels	8.00
2 book cases	35.00	1 spade	1.00
4 tables	16.00	1 mowing machine	138.00
12 chairs	33.00	1 hay rake	45.00
		Total	$1,243.00

Tithing office help, another important sundry expenditure, was paid, as one would expect, almost exclusively "in kind" out of the commodities received as tithing. For example, the chief clerk of the Cache Valley Tithing Office, G. L. Farrell, received a salary of $1,200 in 1874. This salary was paid as follows: [38]

[37] Cache Valley Ward Ledger, 1860–1886, p. 145.
[38] Tithing Office Day Book, 1874, p. 47, Cache Stakehouse vault. Farrell

Cash	$100.00	Molasses	$ 1.44
Merchandise	100.00	Oats	171.48
Butter	100.00	Livestock	100.00
Wool	100.00	Meat	64.20
Hay	100.98	Salt	7.86
Lumber	164.00	Vegetables	100.00
Lime	3.40	Wheat	51.10
Corn	24.04	Wares [hardware]	11.50
		Total	$1,200.00

Deliveries to General Tithing Office

As already noted, a total of $1,952,892, or 71 per cent of all receipts of the Cache Valley tithing office during the 1863–1900 period, was delivered to the General Tithing Office in Salt Lake City or expended on their order. These deliveries were irregular, and indicate that Cache Valley officials were not operating under orders to make regular deliveries of cash and produce to the General Tithing Office. On the other hand, it would appear that tithing was delivered to Salt Lake City or elsewhere only under special order, and that such orders were intermittent. Apparently, when the Salt Lake Office needed tithing of a certain type or amount, an order would be dispatched for its delivery as soon as convenient. Alternatively, when local tithing offices accumulated "surpluses" of certain items they would notify the General Tithing Office which would then order a certain disposition of these commodities.

Of course, not all of the commodities debited to the General Tithing Office would be sent to Salt Lake City. Some would be taken, on the order of the G. T. O., to Church Stock Farms, Indian Farms, and other tithing offices whose receipts on particular items were not sufficient to sustain the rate of desired disbursements.[89] The Cache Valley office, by and large, maintained the Oxford, Idaho, Church Farm, the Washakie Indian Farm, and gave assistance to the Bear Lake colony during the first years of struggle and deprivation. In the year 1864, for example, when Bear Lake Valley was being settled, Apostle Charles C. Rich, who headed the Bear Lake colony, was permitted by the church to withdraw $435.80

was the Cache Valley tithing clerk from 1860 to 1880, with the exception of two years, 1874–76, when he was a missionary in England. He was also County Recorder, 1860–74, and postmaster, 1867–74.

[89] In 1879, the people of St. George, in southern Utah, experienced a bad crop year, and a large number of the people were given partial relief out of the stores in the Southern Utah Tithing Office. Other stakes in southern Utah were asked to deliver their excess tithing and donations for the poor to the St. George office (Journal History, 27 Oct. 1879).

worth of grain, vegetables, and dairy products from the Cache Valley tithing office for the support of the new settlement.[40] A similar procedure was that by which a tithing office paid out, on the order of the G. T. O., a stipulated value of produce to persons who had an equivalent credit at another tithing office. One farmer in Cache Valley used this device to support his father in Arizona. By turning produce and stock into the Cache Valley tithing office, he obtained credit which, when transferred to the Arizona tithing office via the G. T. O., made it possible for his father to obtain the commodities needed for his support.[41]

Frequently, especially during the years 1880–1900, the General Tithing Office signed contracts to sell to produce dealers, factories, and merchants commodities which were on hand at the various tithing offices throughout the territory. Most tithing wool, for example, was hauled to woolen factories. Produce was often shipped to out-of-town dealers. In April, 1894, the Presiding Bishop instructed the local tithing offices in Cache Valley to deliver all their leftover "good" potatoes to a dealer in Ogden for shipment to Kansas.[42]

One interesting recurring order directed local tithing offices to ship a large quantity of beef, and all the turkeys and chickens they could spare, to the Salt Lake office for distribution to church employees on Christmas Eve. In December, 1894, for example, the Cache Valley office sent a carload of beef (approximately twenty-five head) and 1,742 pounds of dressed chickens valued at 9 cents a pound, to the General Tithing Office for this purpose.[43]

Because of the irregularity in orders from Salt Lake City in regard to the disposition of Cache Valley tithes, there were certain years in which deliveries to the General Tithing Office far exceeded the total receipts of the Cache Valley office. In 1873 total Cache Valley tithing receipts were not quite $77,000, while almost $90,000 were delivered to the General Tithing Office, or disbursed on their order. On the other hand, there were years in which the great bulk of tithing receipts was retained locally, as in 1872, when tithing receipts were almost $91,000, while less than $29,000 were sent to Salt Lake City.

As would be expected, most of the tithing sent to Salt Lake City

[40] Account of Charles C. Rich, Logan General Tithing Office Book B, 1864–65, Cache Stakehouse vault.

[41] A. N. Sorenson, "Biography of Hezekiah Eastman Hatch," p. 31, typewritten manuscript in the hands of Mr. Adrian W. Hatch, Logan, Utah.

[42] Letter Book of L. R. Martineau, pp. 61, 64.

[43] *Ibid.*, pp. 144, 147, 150–4.

was in the form of cash, grain, livestock, and other nonperishable commodities. Approximately $273,000, or 81 per cent, of all cash receipts were sent to the G. T. O. in Salt Lake City during the years 1863–1900. More than 250,000 bushels of wheat ($506,024), or 61 per cent of all Cache Valley wheat tithing, were transferred to the General Tithing Office. This comprised more than 25 per cent of all Cache Valley transferals to the central church office. Although wheat shipments to Salt Lake were fairly regular, averaging about 7,000 bushels per year, the largest single shipment of wheat was in 1873, when more than 20,000 bushels (worth over $40,000) left Cache Valley for Salt Lake City. During the years 1881–84, more than $100,000 in wheat was sent from Cache Valley to the G. T. O. in Salt Lake City.

More than a third of all Cache Valley tithing labor (valued at over $250,000) was rendered on behalf of the trustee-in-trust or Presiding Bishop's Office. This represented about 13 per cent of all Cache Valley transferals to the G. T. O. More than $100,000 worth of this labor tithing was contributed to the Salt Lake Office during the years 1863–68 and was largely in the form of donations and repayments to the Perpetual Emigrating Fund. Another period of heavy labor tithing credited to the office of the trustee-in-trust and Presiding Bishop's Office was during the years 1878–84, when the Logan Temple was being built, and when $80,000 worth of labor tithing was donated. In addition, 14 per cent of Cache Valley transferals to the G. T. O. was in cash, the largest amount of which was transferred during the three-year period, 1881–83, when more than $55,000 in cash left Cache Valley. The remaining transferals to Salt Lake offices were in butter, cheese, vegetables, merchandise, hay for church farms, and other commodities.

The Exchange Function of the Tithing House

The primary function of the local tithing office, undoubtedly, was the receipt, storage, and disbursement of tithing and other receipts in kind. As such, it was heavily involved in the economic life of the community. Actually, however, its function was even broader, for it was also a general store. Indeed, in most of the early settlements, the tithing house was the only general store until the establishment of co-operative retailing establishments in most Mormon settlements in 1869. As mentioned earlier, it was the custom of family heads to take their surplus production, of whatever kind, to the tithing office for credit. When the family wished

to obtain commodities not produced by them in sufficient quantities to meet consumption needs, they would draw on the stores in the tithing office. At "tithing settlement," these "credits" and "debits" were totaled, compared, and settled.

Actually, the general-store function of the tithing house was much more than this. A brisk trade flourished in what were called "exchanges." Persons would bring in eggs and take out squash, or bring in wheat and obtain credits which could be used in paying hired help. For that matter, persons brought cash and bought whatever was available. The amounts of these exchanges were not included in the tables of receipts and disbursements of the Cache Valley tithing office; nevertheless, they were important to the tithing office as well as to the persons involved. Each tithing office kept an "Exchange Account," in which were listed the transactions involving what were called "exchanges for better products." During the period 1863 to 1900, the value of these exchanges was $327,574, or an average of $8,620 per year. These exchanges or "sales" became relatively more important at the end of the period. Whereas they averaged $2,500 per year in the 1860's, representing 5 per cent of total receipts of the tithing house in those years, they averaged $20,582 per year in the 1890's, representing almost 30 per cent of all tithing office receipts in those years.

A tithing office "Exchange Account" for part of the year 1864 shows the nature of these transactions: [44]

Date	*Item Received by Tithing Office*	*From Whom*	*Value*	*Item Given in Exchange*
Jan. 25	Livestock	Cad. Owens	$ 9.00	Hay
Feb. 9	Gold dust	Bro. Hoops	5.75	Hay
Feb. 22	Wheat	T. Roberts	5.00	Oats
Feb. 22	Labor	S. James	4.50	Hay
Mar. 2	Cash	—	3.00	Hay
Mar. 2	Team labor	J. Goodwin	20.00	Hay
Mar. 2	Team labor	S. Dibble	6.50	Hay
Mar. 9	Cash	—	16.00	Hay
Mar. 9	Cash	F. Tidwell	10.00	Hay
Mar. 9	Cash	Godby [Godbe]	2.00	Salt
		• • • •		
Sept. 30	Cash	E. K. Fuller	5.50	Butter
Oct. 12	Cash	E. K. Fuller	3.25	Butter
Oct. 12	Cash	—	5.50	Vegetables
Oct. 13	Cash	—	3.00	Vegetables
Oct. 27	Gold dust	J. Anderson	6.00	Sheep
Oct. 31	Gold ($4) greenbacks ($2)	Christiansen	6.00	Sheep

[44] Logan Tithing Account Book, 1863–68, p. 5, Cache Stakehouse vault.

Evidently, during the winter months a large number of people "bought" hay from the tithing office. During other months of the year, their purchases were divided between such items as butter, eggs, vegetables, livestock, and other "exchange" items. Similarly, one would gather that more cash was in circulation in the fall than at other times of the year.

Banking Functions of the Tithing House

In serving as a receiving and disbursing agent, and as a trading center, the tithing office was an important collective economic institution, serving in many ways to facilitate trade and exchange. Since it was one of the very few trading centers in Cache Valley, and since no banks were established in Cache Valley until 1882, the tithing house came to perform several functions now associated with banks. That it extended short-term credit by allowing withdrawals of goods in excess of accumulated credits, has been made clear. That it facilitated saving by permitting the accumulation of credits through "overpayments" of tithing, has also been mentioned. All in all, the tithing houses were community bookkeepers. The credits of a tithepayer were his "deposits." His debits were "deposit withdrawals." The tithepayer was permitted to transfer his credit or "deposit" by writing an order or draft on the tithing house. Many laborers and suppliers were paid with such orders. These orders entitled the holder to withdraw a certain value of commodities, which would then be debited to the account of the hirer. Such check-orders were common means of payment, quite as much at the end of the century as in the early frontier period. The following draft on the Cache Valley tithing office, marked "Paid in flour," was found among its records, and is representative of these orders: [45]

Smithfield
Cache Co
Feb. 2nd 1885

Bp G. L. Farrell

Please pay Charles Jones the 5^{00} in flour and the $5.00 in Rye and 1^{00} in Molasses you gave me account of.

Francis Sharp

Most of the stake tithing offices paid most or all of their expenses in orders on their own meat, produce, and feed stores. The tithing office thus tended to be a regional self-sufficient system.

[45] This pencilled order, on notebook paper, was pasted on the inside of the cover of the Smithfield Ward Day Book G. 1882, Cache Stakehouse vault.

While such personally signed orders served as an admirable means of payment where local citizens were involved, they could not very well be used in territorial exchange since they could be "cashed" only at the tithing office on which they were made. Consequently, the General Tithing Office, in Salt Lake City, developed a means of facilitating territorial trade and exchange by issuing an acceptable circulating medium called "tithing orders" or "tithing scrip." These G. T. O. orders enjoyed a continuous and wide circulation, especially in trade involving two Mormons. They were placed in circulation by the trustee-in-trust, the General Tithing Office, and church business enterprises in Salt Lake City, which used them to pay charitable cases, employees, and suppliers. The church's receipts were mostly "in kind." It was virtually impossible to convert tithing resources into cash, particularly before the development of an extensive export trade in the 1870's and 1880's. Yet, it was cumbersome for the church to pay those to whom it was obligated by giving tithing livestock and produce. The issuance of tithing orders thus facilitated the transfer of goods and services, and, because of their general acceptance, convenience, and easy convertibility, enjoyed limited circulation from the time of their first issuance in 1848 until their withdrawal in 1908. These orders on the General Tithing Office, or any other tithing house, entitled the bearer to stipulated value of commodities at the regular market price of those commodities. In some cases, the tithing order bore notation that the specified value was to be paid in some particular commodity (e.g., grain, butter, or meat). In other cases, the bearer might choose to receive it in any form available.

With improvements in printing facilities in Salt Lake Valley, the form and style of these orders became more complex and formal, and they came to resemble in appearance as well as in essence a local currency. In elaborate printed or lithographed form, they were usually referred to as "tithing scrip." In their simplest form, they resembled the due bills used in mercantile trade throughout frontier America. In this form they were acceptable, for many years, in payment of territorial and county taxes, and a certain proportion of tithing orders comprised the payroll of nearly every business establishment in Mormondom. Church employees and charity cases received part or all of their pay in this scrip. In 1871, for example, tithing scrip was used to pay laborers on the construction of lines for the Deseret Telegraph Company. Orson Huntsman, who erected seven miles of poles for a branch line from St. George, Utah, to Pioche, Nevada, received $275 in tithing scrip for

his labor, and used the scrip to pay a carpenter who worked on his home.[46]

Professor Marcus Jones, who saw evidences of wide circulation of tithing money, particularly in periods of monetary stringency, described an intricate issue of the 1870's, as follows: [47]

> There were two rows of figures running from 1 cent to several dollars, according to the size of the bill, printed on the top and bottom of the order so that their figures corresponding to the amount purchased were punched out, and when the last figures were gone the order was useless. These orders were printed from $1 to $20 on different bills, and less amounts than $1 were written on a blank space left for bills less than $1.

Because of the time and trouble in punching out the figures, this scrip was replaced, in 1886, with a lithographed series which was essentially the same as the previous issue except that the orders did not have numbers around the edge. They were issued in denominations of 5, 10, 25, and 50 cents, and $1.00, $5.00, and $10. They were designed and manufactured by Gast of New York, were on very good paper, and resembled the national bank notes of the period. About $100,000 of these were put in circulation. As with the others, they were "promises to pay the face of the order in produce, merchandise, or meat at the general storehouse. The meat orders were printed on pink paper, and were not exchangeable for produce or merchandise, and vice versa." [48] Professor Jones described them as follows: [49]

> The design has for the face an imitation lathe-work border, a beehive in the lower left-hand corner, the number in the corner above it, and "25¢." in the opposite upper corner surrounded by lathe work; the corner below has the signature of the presiding bishop, Wm. B. Preston. The center has "Twenty-five cents" surrounded by lathe work; above this runs a scroll with the words "General Tithing Storehouse" in large letters, over the signature are the words "Good only for merchandise and produce at the General Tithing Storehouse;" near the beehive are the words "Presiding Bishop's office, October 1, 1889, Salt Lake City, Utah." The opposite side of the note has a picture of the temple, etc.

The meat orders were identical with the produce orders except for the necessary changes in wording and the pink color. Separate meat scrip came into use in 1886 because of the growing livestock interests of the church. Through the use of the meat scrip it was possible for the Presiding Bishop's Office to exercise a measure of

[46] "Diary of Orson W. Huntsman," Vol. I, p. 52, typescript, Historical Records Survey, Works Progress Administration, Library of Congress.
[47] Marcus E. Jones, *Utah* (Washington, 1890), 861.
[48] Jones, *Utah*, 861.
[49] *Ibid.*

control over the market demand for meat, as against produce and other commodities. When the United States government confiscated the church's livestock under the Edmunds-Tucker Act of 1887,[50] the issue of meat orders was stopped and the holder of the merchandise or produce scrip was permitted to buy any item in the General Storehouse, including meat when it was available. When the escheated church property was returned to the church in 1894 and 1897, church holdings of livestock once more increased. The issuance of special meat orders was resumed in January, 1898, and church employees were once more given a percentage of their wages in such orders.[51]

One of the difficulties involved in paying employees with scrip was that the tithing offices, at any particular time, might not have the type, quality, or amount of goods desired by the holder of the tithing order. Because of this, and because of the inconvenience to private merchants of "cashing" the tithing orders received by them in trade, it was common for private business houses and suppliers to accept the tithing orders only at a 10 or 20 per cent discount. Some of the merchants who received the scrip, in turn, sometimes sold it for cash to speculators who would then take a supply to the tithing offices for redemption in such quick-moving commodities as butter, eggs, etc. Some "mean brethren" went so far as to buy up tithing orders for half their face value and pay their tithing with them![52] To avoid these "sales" of tithing scrip, to the possible disadvantage of the church, the Presiding Bishop's Office began paying its employees partly in currency and "store pay," so that they would have no reason to trade off the tithing orders at a discount. At the same time, tithing officials attempted to obtain increased donations of home-produced articles in order "to meet the wants of the [church] employees as fast as possible," and thus "render it entirely unnecessary for the men to sell their orders."[53]

[50] 24 Stat. L. 635. The Edmunds-Tucker Act dissolved the Corporation of the Church of Jesus Christ of Latter-day Saints and required that all real and personal property — chapels and burial grounds excepted — of that corporation be escheated to the United States government. More than two million dollars' worth of church property was confiscated under the law, but was finally returned after Utah became a state in 1896.

[51] Journal History, 31 Jan. 1898.

[52] At a bishop's meeting in 1878, the Presiding Bishop, Edward Hunter, publicly deplored the practice of selling tithing orders for half their value. "Those persons who would buy them at such price and pay their tithing with them," he asserted, "were too mean for good brethren" (Journal History, 7 Feb. 1878, also Jan. 28, March 8, 29, 1878).

[53] *Ibid.*, 31 Oct. 1878.

A widely publicized charge was made in 1900 by the (then) anti-Mormon newspaper, the *Salt Lake Tribune*, that church business interests were abusing tithing scrip. According to this charge, tithing orders were purchased by Mormon businessmen at the tithing office at a discount for cash and paid out at par to employees: [54]

> The system is for the employer to take a certain amount of money to the Mormon Church offices and get in exchange tithing orders at a discount. These he pays to his men at par, and he is ahead the rake-off. The Church is just that much cash ahead, for the issuance of these orders is unlimited and unrestricted.

These charges were denied by the church. According to the Presiding Bishop, no tithing orders were ever sold for cash, but were issued (a) to pay part or all of the wages of employees of the church and its enterprises; (b) to issue to charity cases; and (c) to pay for real estate and supplies purchased by the church from members and other business interests. It was admitted, however, that a certain percentage of the payroll of many Mormon companies was in the form of tithing orders, and this, it was asserted, was because these firms did work for the church and received tithing orders from the church as payment.[55] Church payments to business firms in scrip were defended on the grounds that the church received little money in tithing and had no recourse but to pay in merchandise via the medium of scrip.[56] As an editorial in the *Deseret News* stated, "Tithing affairs . . . have to be regulated according to payments. While they are received 'in kind,' they will probably have to be paid out largely 'in kind,' and the scrip system will have to be continued." [57] In any event, the issuance of the orders certainly was not "unlimited and unrestricted," for the church ultimately had to redeem all its scrip with tithing livestock and produce.

Tithing scrip was issued, and continued to circulate, until 1908. After that date, according to a statement by Presiding Bishop John Wells, "it became the policy of the Church to sell tithing in bulk and Church employees and charity cases received cash entirely for their compensation. After 1908 the Bishop's General Storehouse closed." [58]

[54] From the *Salt Lake Tribune* as noted in the Journal History, 29 Jan. 1900.
[55] Journal History, 29 Jan. 1900.
[56] *Deseret News* (Salt Lake City), 31 Jan. 1900.
[57] *Ibid.*, 2 Feb. 1900.
[58] Wells to Joseph Fielding Smith, in "Daughters of Utah Pioneers," *Heart Throbs of the West*, 12 vols. (Salt Lake City, 1936–51), I, 231.

Other Activities of the Tithing Offices

There were several occasions in the nineteenth century when the president of the church called upon the tithing offices to perform special tasks as disbursing agents of the church. One such occasion was in 1880, the Jubilee Year in the history of the church. John Taylor, president of the church, suggested to the general conference of the church, in April, 1880, that the church institute a program for alleviating the lot of the poor by a redistribution of wealth. The tithing offices were asked to implement this program. The record of the conference may be summarized as follows: [59]

> President Taylor said he hoped that the people would be kind and helpful to those whose land suffered for irrigating water, and to any who were in distress. Many persons, he continued, had lost the last cow in consequence of the hard winter. He proposed that a thousand good cows — not one-teated animals — be gathered up and distributed among such persons, three hundred to be given by the Church, and the balance to be given by the different Stakes. The conference unanimously approved this proposal. President Taylor further moved that 5,000 sheep be distributed also; 2,000 to be given by the Church, and the balance to be donated by the several Stakes. Carried unanimously. He said the Women's Relief Society had saved up 34,761 bushels of wheat against a time of scarcity. He proposed that they lend this to those who needed it, the Bishops to be responsible for it to be paid back after harvest [presumably with tithing wheat]. Someone asked whether it was to be loaned without interest. "Of course it was," replied President Taylor; "this is the year of Jubilee." The vote to sustain it was unanimous.

The chain of tithing offices at the ward, stake, and general church level was an admirable organizational device for executing this interesting welfare program. The church's contributions were delivered to important regional tithing offices from church farms and from local tithing herds and flocks. The same regional tithing offices arranged to collect the contributions from the various stakes, which were usually taken out of the stake tithing offices. The redistribution was then made to the wards and stake tithing officials in accordance with the recommendations of the bishops, stake presidents, and general officers of the church.

Most of the tithing houses carried on other activities not directly connected with their primary function of serving as receiving and disbursing agents of the church and as centers of trade and exchange in their communities. Most of the tithing houses maintained or contained the local branch office of the Deseret Telegraph System, erected in 1867 to connect the principal Mormon settlements with

[59] Journal History, 7 April 1880. The conference minutes have been summarized rather than quoted verbatim.

Salt Lake City.[60] The local operators were sometimes maintained by donations, which were received by the tithing office and credited to a special "Telegraph Account." In other cases, the pay of telegraph operators and the cost of maintaining the office came directly out of tithing funds. The operation of the telegraph office was thus largely a part of the tithing office, and messages to and from the tithing office were carried without charge.

Tithing houses were also, in many cases, a kind of community-maintained stopping place. Visitors to a settlement commonly were directed to the tithing office where their horses, mules, and oxen could be accommodated, and where camping facilities were available. No charge was made for this service in the case of visiting ecclesiastical officials; and fees charged nonofficial visitors were usually nominal.

Tithing houses also served, in many communities, as centers of handicraft and manufacturing. Some of them hired skilled persons to do such custom-work as blacksmithing, weaving, shoemaking, and similar activities. One tithing house was a center for making starch out of potatoes, and in one year (1870) expended a total of $443.96 worth of butter, corn, leather, hay, lumber, merchandise, vegetables, labor, and wheat tithing for this purpose.[61]

Finally, the tithing offices maintained a close relationship with the community co-operative general stores which were established beginning in 1869. Each maintained a sizable account with the other. Tithing orders were accepted at full value by the co-operative stores, and co-op scrip, during the years it was issued, was similarly accepted by the tithing office.

Conclusion

It cannot be denied that the Mormon tithing house was an interesting, and in some respects unique, agency of the collective economic will. The tithing office was, in many respects, the economic center of Cache Valley. Just as the Logan Tabernacle (and later, the million-dollar Logan Temple) was the spiritual center of Cache Valley Stake, so the tithing office was the center of community accounting, trade, and exchange. It was a church revenue institution, but it was also the instrument which made possible many of

[60] L. J. Arrington, "The Deseret Telegraph System: A Church-owned Public Utility," *Journal of Economic History*, XI (1951), 117–39.

[61] See the List of Property Paid for Working Potatoes into Starch, 1870, in Smithfield Tithing Day Book C, 1868–1871, Cache Stakehouse vault.

the community services distinguishing the compact and well-organized Mormon settlements from the individualistic settlements commonly found elsewhere in the contemporary Mountain West. As a device for achieving collectivistic (or theocratic) ends, it was admirably suited to the barter economy of the frontier.

By Ernest M. Lander, Jr.
PROFESSOR OF HISTORY AND
GOVERNMENT AT CLEMSON COLLEGE

Manufacturing in South Carolina, 1815-60[1]

The development of industry in South Carolina to 1860 is analyzed carefully, using information culled from manuscript census returns and the correspondence of businessmen. The failure of manufacturing to grow more rapidly is ascribed to a shortage of capital and skilled management, an unfortunate geography, competition for factors of production by local agriculture, and competition in the product markets by Northern industry.

South Carolina, on the eve of the Civil War, was far from ranking as a major industrial state. In Pennsylvania, the nation's leader, manufacturing firms in 1860 had a combined capitalization of $190,000,000; in Virginia, the South's leader, of $27,000,000; but in South Carolina of only $7,000,000. Whereas annual production in Virginia was $50,000,000, in South Carolina it was a mere $10,500,000,[2] and chiefly consisted in processing agricultural and forest products.[3]

Prior to 1815 almost all manufacturing was of the domestic handicraft type, dependent for power on human hands, animals, or water. A bare handful of sizable plants, such as William Hill's iron works in the York district and a large cotton mill which operated for a time at Charleston, existed in the state.[4] The handicraft industry

[1] I examined complete or broken files of more than 70 South Carolina newspapers, of which the *Charleston Courier* proved invaluable. Unfortunately, I was unable to find a single letter, diary, or memoir of any factory worker. In this paper, the phrase, "the South," designates the 11 states that constituted the Confederacy in 1861.

[2] *Eighth Census, 1860, Manufactures* (Washington, 1865), 544, 559, 639.

[3] The six industries with greatest capitalization in 1860 were, in order: sawmilling, turpentine distilling, rice milling, textile manufacturing, grist and flour milling, and the manufacture of carriages and wagons. In terms of value added by manufacture, machinery manufacturing replaced rice milling in third place (MS returns, Eighth Census, 1860, Products of Industry, South Carolina, South Carolina Historical Commission, Columbia; *Eighth Census, 1860, Manufactures*, 559). Usually the manuscript returns for South Carolina are more accurate than the published returns.

[4] *City Gazette & Daily Advertiser* (Charleston), 12 May 1795; *Charleston Courier*, 31 Oct. 1808.

was highly diversified, and most districts were self-sufficient. The districts above the fall line lost their economic isolation only when, after 1850, railroads reached the back-country towns of Pendleton, Greenville, Spartanburg, and Yorkville.

The introduction of the steam engine after 1816, especially below the fall line, helped to stimulate an industrial expansion which was not broken until 1838. The textile industry was founded by a small group of New Englanders who started four or five cotton mills near Spartanburg and Greenville. Their example was widely emulated by planters and merchants in the middle and southern districts of the state when, in the late 1820's, the price of raw cotton began falling. The boom in mill construction lasted from 1828 to 1838; at least 16 cotton mills, having variously from a few hundred spindles to 4,000, began operation during these 11 years.[5] The back-country iron industry also reached its peak before 1838, by which time three corporations, with a total capitalization of $500,000, had gained control of the best ore lands in the state. The iron foundries and rice mills in Charleston likewise expanded and flourished;[6] the failure of gun-and-weapon manufacture to do so made it unique in this period among the major industries.

But industrial stagnation became general during the nationwide depression from 1838 to 1844. Not a single cotton mill was built; the iron industry languished. Then, from 1845 to 1850, came a flurry of activity, chiefly in sawmilling, rice milling, textiles, carriage manufacturing, and paper manufacturing. Two recently introduced industries, railway car manufacture and turpentine distilling, progressed, the turpentine industry moving southward as many pine forests in North Carolina were exhausted.[7] This small boom in construction was paralleled by a larger boom in propaganda, William Gregg being an outstanding contributor in both respects. The union of agriculture and industry became a popular subject with bankers

[5] E. M. Lander, Jr., "The South Carolina Textile Industry before 1845," *Proceedings* of the South Carolina Historical Association, 1951 (Columbia, 1952), 19–28.

[6] *Statutes at Large of South Carolina*, 12 vols (Columbia, 1836–74), VIII, 350, 376, 437, 451–3; John E. Land, *Charleston: Her Trade, Commerce and Industries, 1883–4* . . . (Charleston, 1884), 139, 167–8; on the Charleston rice mills, see E. M. Lander, Jr., "Ante-Bellum Milling in South Carolina," *South Carolina Historical and Genealogical Magazine*, LII (1951), 128–32.

[7] William Gregg, *Essays on Domestic Industry* . . . (Charleston, 1845); James H. Hammond, *Anniversary Oration of the State Agricultural Society* . . . *1841* (Columbia, 1841), 3–26; Percival Perry, "The Naval Stores Industry in the Ante-Bellum South, 1789–1861" (Unpublished Ph.D. dissertation, Duke University, 1947), 271–9; MS returns, Seventh Census, 1850, Products of Industry, South Carolina.

and merchants; the State Agricultural Society gave its ardent blessing; for a time nearly every newspaper in the state was a crusader for industry.

But agitation about industry could not compete with agitation about slavery for men's spirits, and the return of agricultural prosperity in 1851 rendered industry itself less able to compete for men's capital and energy. The decade before 1860 brought varying fortunes to the several industries of the state. Below the fall line, the few textile mills located there went out of business, and the erstwhile profitable sawmilling industry declined; in the back country, the iron industry continued to contract. But moderate gains were achieved in the manufacture of machinery, railway cars, carriages, and finished wood products, while turpentine distilling showed exceptional growth.[8]

The manufacturing center of the state in 1860 was Charleston, the total capital invested in industry in this District being about $1,500,000. While six or seven counties in the South exceeded this mark, only two did so by a wide margin.[9] The manufacturing plants of Charleston produced a wide variety of goods. Railway cars were made by two railroad shops and two other plants; their annual output, valued at $250,000, was exceeded by no Southern city. Charleston was likewise first in rice milling. The largest local rice mill, the West Point Mills Company, was capitalized at $200,000 and owned 89 Negro slaves. The largest of the six iron foundries in Charleston employed more than 100 men. The city and its environs held many other manufacturing establishments with capitalizations ranging from $25,000 to $100,000. The machinery and railway cars made there were sold from North Carolina to Louisiana, while the rice from its mills went all over the United States and to Europe.[10]

[8] MS returns, Eighth Census, 1860, Products of Industry, South Carolina.

[9] *Eighth Census, 1860, Manufactures*, 202, 558, 577, 635–7. As early as 1826, Robert Mills wrote that 1,200–1,500 mechanics were located in Charleston, along with seven or eight establishments using steam power. In 1860, according to William Gregg, there were 55 steam engines, although the number of workers was still about the same as in 1826 (Robert Mills, *Statistics of South Carolina . . .* [Charleston, 1826], 427–8; *Charleston Daily Courier*, 24 Mar. 1860).

[10] MS returns, Seventh Census, 1850, Eighth Census, 1860, Products of Industry, South Carolina: Charleston District; *Charleston Daily Courier*, Aug. 27, Sept. 3, 1853, Feb. 13, Aug. 22, 25, 31, Sept. 7, 1860. Capitalized at $25,000 or more were several sawmills; factories making sashes, blinds, and doors; brickyards; turpentine distilleries; carriage and wagon shops; cooperages; a flour mill; a tannery; a saddlery; a paint and lead factory. Smaller firms produced hats, ships, flour, shoes, and umbrellas. Other significant but unsuccess-

Apart from the port city of Charleston, the development of industry in a region often depended on the arrival of a railroad. Thus the city of Columbia and the Horse Creek Valley, located across the Savannah River from Augusta, both became small manufacturing centers after rail lines reached them. The largest paper mill in the South in terms of capitalization, the largest cotton mill, and the largest porcelain ware factory, were all situated on Horse Creek.[11]

In 1860 the factories of South Carolina employed about 7,000 workers, of whom 1,000 were women and children. Negro slaves were used in nearly all the industries in the lower part of the state, as earlier 200 or 300 had been used in the upstate iron industry. A free Negro, William Ellison, operated what was the largest factory in the state making cotton gins, although it employed only a dozen workers.[12] In the textile industry, all six of the mills in central and lower South Carolina employed slaves, the Saluda factory alone using about 100, but only one mill in the upstate region employed them. Beginning in the late 1840's, the steadily rising price of slaves forced the mill owners to start replacing Negroes with whites, and by 1860 only one small mill was still using slaves. White labor, particularly women and children, was plentiful and cheap; William Gregg boasted that he could stock with white workers in a month's time another mill the size of Graniteville.[13]

Labor, free as well as slave, was usually unorganized and inarticulate, but occasional rumblings of discontent reached the newspapers. The length of the working day – 12 to 14 hours – seems to have been the chief grievance. Still, manufacturers were almost universally praised by the local press as public benefactors, and, except in the larger towns, their policies were paternalistic. The factory owners often sought to furnish moral guidance for their employees, even to the point of requiring religious worship and banning intoxicants from the mill villages.[14]

---

ful enterprises between 1840 and 1860 were a sugar refinery, a cordage factory, a large shoe factory, and the only cotton mill in ante-bellum South Carolina to be run by steam power. One local entrepreneur, having persuaded nearby farmers to grow castor beans, had some success making castor oil (MS returns, Seventh Census, 1850, Eighth Census, 1860, Products of Industry, South Carolina: Charleston District; *Eighth Census, 1860, Manufactures, passim; Charleston Daily Courier, passim*).

[11] *Eighth Census, 1860, Manufactures, passim.*

[12] MS returns, Seventh Census, 1850, Eighth Census, 1860, Products of Industry, South Carolina; *Charleston Daily Courier*, 25 Jan. 1853.

[13] E. M. Lander, Jr., "Slave Labor in South Carolina Cotton Mills," *Journal of Negro History*, XXXVIII (1953), 161–73.

[14] *The Southern Chronicle* (Columbia), 30 Apr. 1845; *Charleston Courier*, Sept. 7, 8, 10, 1849, Feb. 26, 1850; *The Spartan* (Spartanburg), 27 Mar. 1851;

The available statistics on wages are not very reliable. The 1860 census reported an average wage for industrial workers in South Carolina of $17 per month, about two-thirds the average for Pennsylvania. The highest average wage in South Carolina was apparently paid by the Charleston iron foundries – about $30 per month. But these figures should be regarded skeptically: the basis for computing the wages of slaves is nowhere clarified, and the uniformity of returns from several districts prompts a suspicion that census officials had made entries without bothering to collect data. Overseers and managers, judging from scattered instances, were paid from $500 to $1,000 per year. The wages of both workers and managers remained fairly constant from 1820 to 1860.[15]

Such was, then, the status of industry in South Carolina on the eve of the Civil War. But how did it happen that manufacturing in South Carolina, having developed so far, did not become more significant in the economic life of the state? More especially, why did the cotton textile industry suffer a rather stunted growth, in view of its ready access to cheap labor and raw materials, its favorable climate, and its fairly early start?

Some writers have suggested, in reply, that dominant opinion in the South was hostile to the introduction of manufacturing, that the planters, being properly wedded to agriculture, shunned a backstairs alliance with the tainted ways of industrialism. This explanation, however plausible, does not hold for South Carolina, if indeed it holds for any part of the South. If a South Carolina newspaper ever editorialized against the establishment of a local factory, the case has escaped this writer's notice. Many newspapers were warmly sympathetic to manufacturing, especially from 1845 to 1850; usually most of them were just indifferent to it. The manufacturers also tended to be investors in other forms of business enterprise: railroads, banks, shipping firms, plant roads. Likewise many prominent planters and political leaders risked their capital in industrial ventures. Certainly after 1840 the businessmen of Charleston controlled

---

Letterbooks, II, 415, J. J. Gregg & Co. Papers, University of South Carolina; *Camden Journal*, 30 June 1849.

[15] In the 1820's, William Bates was paid $1.50 per day to manage Hill and Clark's cotton mill (August Kohn Papers, in possession of Mrs. H. K. Hennig, Columbia). The factory overseer of John E. Colhoun, in the same period, received $500 per year (Commonplace book of John E. Colhoun, Clemson College Library). A relatively large cotton mill, Vaucluse, paid its general overseer $2.25 per day in 1860 (Letterbooks, II, 323, J. J. Gregg & Co. Papers, University of South Carolina). Saluda factory, the second largest cotton mill in ante-bellum South Carolina, advertised for a superintendent in 1844 at a salary of $1,000 per year (*Charleston Courier*, 12 Dec. 1844).

the city council.[16] Seven men who served as governors of South Carolina,[17] along with several Congressmen and many members of the state legislature, invested in manufacturing concerns, some of them rather heavily. In the West Point Mills Company, capitalized at $200,000, the 20 stockholders included two ex-governors and several wealthy planters. The list of shareholders consists exclusively of socially prominent names: Aiken, Heyward, Legare, Izard, Huger, Lowndes, Mazyck, Stoney, Mure, Ravenel, West. The 16 stockholders of the Nesbitt Iron Manufacturing Company, capitalized at $300,000, were, among others, a governor, a Congressman and an ex-Congressman, a retired college president and a professor, a bank president and Wade Hampton II (one of the richest planters in the South), a general, a judge, and three members of the state legislature from Richland District.[18]

But, although the rich men of South Carolina invested part of their funds in manufacturing, they did not have as much surplus wealth to turn to this use as did the merchant-capitalists of New England. In South Carolina it was difficult to raise enough capital to build factories of optimum size for operating efficiency. Moreover, the normal procedure for collecting capital was by installment, and often it was paid in, not in cash, but in slaves, land, or other goods. The first owners of three of the largest firms in the state – the Nesbitt iron works, the Saluda cotton mill, and the Charleston cotton mill – all failed largely because they began operations without enough liquid capital.[19] Many factories were burdened with heavy indebtedness, owed often to Northern concerns as a result of the proclivity of South Carolina manufacturers for handpicking their equipment from the latest models. Physical capital existed under grave hazards, especially of fire,[20] so insurance rates were high. The shortage of local capital in the state helps to explain why a substantial part of South Carolina industry was owned by recent

[16] *Yearbook, 1881: City of Charleston, So. Ca.* (Charleston [1882]), 373–5.

[17] George McDuffie, Pierce Butler, Thomas Bennett, Robert F. W. Allston, David R. Williams, William Aiken, and James Henry Hammond.

[18] Charleston County, Deeds, Book Y-13, 447–55; F. H. Elmore Papers, *passim*, Library of Congress.

[19] Petition of Saluda Manufacturing Company to General Assembly, 1837, MS in South Carolina Historical Commission; William Gregg, in *DeBow's Review*, XVIII (1855), 777–91; James H. Taylor, in *ibid.*, VIII (1850), 29; *Charleston Courier*, 23 Jan. 1851; F. H. Elmore Papers, Library of Congress.

[20] In Charleston alone, between 1857 and 1861, three iron foundries, a large flour mill, a railway car factory, the three largest rice mills, the largest sawmill, and the only cordage factory, were destroyed by fire (*Charleston Daily Courier*, *passim*).

immigrants: several of the Charleston iron founders were from Scotland; one iron manufacturing company in Spartanburg District was composed almost entirely of Swedes; the officials and workers of the Southern Porcelain Manufacturing Company were from Vermont; the early upcountry textile manufacturers came mainly from Rhode Island or North Carolina; most of the turpentine distillers had migrated from North Carolina.[21]

These immigrants into the state brought with them skill as well as capital, thereby alleviating another major problem of South Carolina industry. At least until 1850, most overseers and many skilled workers in the cotton mills were Yankees, and a few were Europeans.[22] The quality of these migrants was not always high, many of them having moved South to escape careers elsewhere of crime, drunkenness, and failure. The dearth of expert managers was a particularly severe handicap. The best mill sites in terms of water power were, unfortunately, located in the back-country regions, where transportation facilities were miserable and where the amenities of life were largely absent. Such locations in rural areas and small towns were hardly attractive to the wealthy investors, and few of the planters, merchants, bankers, and lawyers were willing to supervise personally their manufacturing enterprises.[23]

Competition from Northern producers was perhaps the gravest obstacle of all. For more than a decade after 1815, while industry was being established in the North, agriculture was very prosperous in South Carolina and monopolized both capital and energy. By the late 1820's, when planters and merchants in South Carolina looked to manufacturing as a possible answer to the falling prices for raw cotton, they were confronted with sharp outside competition. This competition, becoming even harsher as some Northern industries improved their methods of production, hampered the South Carolina textile mills and dealt a death blow to the upcountry iron manufacturing firms. The depths of the agricultural depression in the early 1840's found more and more South Carolinians preaching the gospel of industrialism, but it also found Northern competition

[21] E. M. Lander, Jr., in *Proceedings* of the South Carolina Historical Association, 1951, 19–28; MS returns, Seventh Census, 1850, Eighth Census, 1860, Free Inhabitants, South Carolina, in National Archives; *Charleston Courier*, 20 July 1850; *Charleston Daily Courier*, 29 Dec. 1853.

[22] MS returns, Seventh Census, 1850, Eighth Census, 1860, Free Inhabitants, South Carolina, in National Archives.

[23] Gregg, *Essays on Domestic Industry*; Letterbooks, II, *passim*, J. J. Gregg & Co. Papers, University of South Carolina; F. H. Elmore Papers, Library of Congress; *Answers of F. H. Elmore, to Questions Propounded by J. Foster Marshall* . . . (Columbia, 1849), 9–18.

keener than ever. In New England the textile mills had reached a mass production level, often operating at a margin of less than one cent per yard of goods sold.[24] The South Carolina producers could not get their costs low enough to compete, and they learned early that they would have to compete on a price basis to sell their goods. The market for textiles in the South was admirably analyzed in 1830 by ex-Governor David R. Williams, who emphasized that the planters, apart from their preference for cotton goods over flax, cared only about price: ". . . therefore," he declared, "if they can get our osnaburgs, at the same price as foreign, they will get it; on every other consideration 99 out of 100 go for cheapness wholly; therefore, as the yankees made theirs of cotton also, we may preach till the cows come home about staple and tariff imposers, etc., [but] if we do not sell cheaper we shall have no preference." [25] Thus the Southern producers, lacking the power to impose political barriers against the influx of goods, were hard driven to survive even in the local market.

The modest returns usually derived from manufacturing made such investments unattractive compared to agriculture. Although some investors in manufacturing were wealthy men, being worth in several instances more than $250,000, in every case the bulk of their fortune was derived from other sources. Of those persons in South Carolina owning property worth more than $100,000 in the years from 1850 to 1860, not a single one – with the possible exception of investors in sawmills and turpentine distilleries – had acquired his wealth mainly from industrial enterprises.[26] Since many failed, and the others got only moderate profits, investment in manufacturing seemed a bleak prospect for South Carolinians. The higher returns of agriculture, rather than the alleged but nonexistent hostility of the planters to industrialism, accounts for the subordination of manufacturing to agriculture in the economy of the state.

[24] Caroline F. Ware, *The Early New England Cotton Manufacture* (Boston, 1931), 151.

[25] Williams to James Chesnut, 10 Feb. 1830, David R. Williams Papers, University of South Carolina.

[26] MS returns, Seventh Census, 1850, Eighth Census, 1860, Free Inhabitants, South Carolina, in National Archives.

By Ray Ginger
ASSISTANT PROFESSOR OF BUSINESS HISTORY
AT HARVARD UNIVERSITY

Labor in a Massachusetts Cotton Mill, 1853-60[1]

Skilled textile workers migrated from Scotland to Massachusetts in the 1850's because of a large wage differential and low steerage rates for the transatlantic passage. For each one of 56 women weavers in the Lyman Mills, expenditures on current consumption took less than 75 per cent of income. But the circumstances were unusual, so this sample does not permit any conclusions about the role of wage-earners' savings in the accumulation of capital in New England. In this mill, two-thirds of the labor force in 1860 had been working there less than three years. The impact of this high degree of labor mobility on labor relations and on the technology of the industry is tentatively assessed.

I

What was the condition of wage earners in the early textile mills of New England? Many positive answers to this question have been advanced, only to be contradicted by other answers, so the debate continues. Much of the confusion is caused by the reliance of students on contemporary newspapers and pamphlets. The testimony contained in these sources is vague and even contradictory, as a sampling will show.

New England resounded in the ante-bellum era with declarations that any man could get ahead, however humble his origin. An early student of New England industry contrasted the low mobility of labor in Europe with the situation in his native region, where sometimes a man would be found "in the profession of the law or of medicine, after commencing his career with the labours of the plane or anvil."[2] A contemporary agreed that New England held no dis-

[1] This article is based mainly on the records of the Lyman Mills, Holyoke, Massachusetts, which are on deposit at Baker Library, Harvard University. Hereafter the collection will be cited merely as Lyman Mills Papers. The company in question was known as the Hadley Falls Company until 1854, but for simplicity of exposition it will be called the Lyman Mills throughout the present article.

[2] Zachariah Allen, *The Science of Mechanics, as Applied to the Present Improvements in the Useful Arts in Europe, and in the United States of America . . .* (Providence, 1829), 350.

tinctions of either wealth or learning "to which any working-man cannot attain. . . . The attainment of these depends mainly on our own efforts and good management." The rich and cultured had arisen from "all classes alike. Then, why complain?" [3] The same view was vigorously asserted by the owners and managers of the textile firms, not just as affirmative of an ideal, but as descriptive of existing reality. Nathan Appleton reported that a wage earner who saved his earnings could accumulate, in one year, "a very considerable capital," so that he could quickly become an investor and employer.[4] John Aiken, agent of the Lawrence Manufacturing Company, developed the same thesis. In the United States, said Aiken, "almost every free laborer has begun to be a capitalist as soon as he has begun to labor. . . . among our native population, laborers for hire do not exist as a class. Young people of both sexes often begin life in this way; but without an intention of following it permanently. Their object is to gain a capital, with which to establish themselves in business on their own account. And this purpose is carried out in the vast majority of cases." [5] Abraham Lincoln, when campaigning in Connecticut in 1860, appealed forcefully to this self-help ideology.[6]

But already in the 1830's, voices were raised in New England to denounce this ideal as a hollow sham, a dishonest apologetic. Seth Luther warned that "our rights are not only *endangered*, but some of them already wrested from us, by the powerful and inhuman grasp of monopolized wealth. . . . a spirit of monopoly exists in this country, as well as in Europe, which is sapping and mining the VERY FOUNDATIONS of our free institutions." [7] Another writer

[3] [Josiah Bigelow], *Review of "An Address to the Working-Men of New-England, . . . By Seth Luther. . . ." By a Factory Hand of Waltham* (Cambridge, 1832), 23.

[4] Nathan Appleton, *Labor, Its Relations in Europe and the United States Compared* (Boston, 1844), 12–14.

[5] John Aiken, *Labor and Wages, at Home and Abroad* (Lowell, 1849), 16.

[6] See his speech at New Haven, Conn., 6 March 1860, in John G. Nicolay and John Hay, editors, *Abraham Lincoln: Complete Works*, 2 vols. (New York, 1894), I, 625. In his Annual Address before the Wisconsin State Agricultural Society, at Milwaukee, 30 Sept. 1859, Lincoln declared: "The prudent, penniless beginner in the world labors for wages awhile, saves a surplus with which to buy tools or land for himself, then labors on his own account another while, and at length hires another new beginner to help him. . . . If any continue through life in the condition of the hired laborer, it is not the fault of the system, but because of either a dependent nature which prefers it, or improvidence, folly, or singular misfortune." *Ibid.*, pp. 581–82.

[7] Seth Luther, *An Address to the Working Men of New England, on the State of Education, and on the Condition of the Producing Classes in Europe and America* . . . , 2d ed. (New York, 1833), p. 6.

charged that the conditions of Northern workmen and Southern slaves were in some respects similar. The slaveholders purchased only the labor, not the souls, of their slaves; in the North also labor was bought and sold "like any other merchandise." The Northern workman was the victim of this system: "Toil, long and incessant hours days and years of toil, a life of toil, toil only is his lot; aye, toil to the injury or entire breaking up of his constitution, even to the death. And with all this toil, and notwithstanding it, there is poverty, suffering, life-long, blighting, soul-depressing, soul-destroying, poverty, with corroding, gnawing, care and anxiety." Therefore, concluded this analyst: "It is not slavery at the South which oppresses you, grinds you down with this iron heel, but slavery at the North. It is not chattel slavery, but wages slavery. . . ." [8]

The testimony similarly clashes about the wages and savings of the ante-bellum factory workers. By the 1840's, journals in New England were saying that significant numbers of women millworkers had been reduced to the level of destitution. These women, finding themselves "obliged to dress poorly or run into debt," allegedly began to supplement their factory earnings by resort to a less honorable trade.[9] "Few of them marry," said the *Boston Quarterly Review;* "fewer still return to their native places with reputation unimpaired." [10] A Cincinnati newspaper ridiculed the statement of a Boston piano manufacturing firm that it had sold eight pianos, at prices ranging from $250 to $350, to Lowell mill girls during a six-month period, but the *New England Offering* countered that more valuable goods than pianos had been earned by women in the Lowell mills: "houses, lands, investments in banks." [11] Many of the factory women, declared one of them in 1850, "have hundreds and thousands of dollars at interest. . . ." [12] The manager of a Lowell

[8] *The Condition of Labor: An Address to the Labor Reform League of New England; . . . by One of the Members* (Boston, 1847), pp. 9, 10, 16.

[9] "Beauties of Factory Life," *Factory Girl's Album and Operative's Advocate* (Exeter, N. H.), 21 Nov. 1846, quoted by Bertha Monica Stearns, "Early Factory Magazines in New England," *Journal of Economic and Business History* (Cambridge, Mass.), II (1930), 703.

[10] *Boston Quarterly Review,* July, 1840, quoted in Elisha Bartlett, *A Vindication of the Character and Condition of the Females Employed in the Lowell Mills . . .* (Lowell, 1841), 3.

[11] *New England Offering* (Lowell, Mass.), II (March, 1849), 71–72; see also I (June, 1848), 71–72.

[12] Clementine Averill, "Letter from a Factory-Girl to Senator Clemens," dated Lowell, 6 March 1850, and published in *New York Tribune,* quoted by Harriet H. Robinson, *Loom and Spindle, or Life Among the Early Mill Girls* (New York, 1898), 194–5; also Henry A. Miles, *Lowell, As It Was, and As It Is* (Lowell, 1845), pp. 114–5; Bartlett, *Vindication,* 21–22.

mill told Charles Lyell that many of the employees owned shares in the firm, at a par value of $500.[13] Some of the companies established savings banks which accepted deposits only from their own employees, and one of these banks accumulated in four years about $26,400. During this period the company paid out in wages about $60,000 per year, so that the ratio of savings to income was 11 per cent.[14]

Many other features of the situation of the early wage earners remain shrouded in doubt. Protests and petitions were offered against the long hours of labor, which averaged about 12 hours per day over the course of the year.[15] Bigelow replied that longer hours were worked in every other occupation of the period, including farming; and a woman said that she and her fellow operatives did not want a reduction in hours because it would mean a reduction in earnings.[16] A physician in 1849 reported that poor ventilation in the mills was very destructive of the health of the operatives, but an investigating committee of the Massachusetts legislature concluded that working conditions in the mills were good.[17] The factories and the boarding houses for operatives in Lowell excited many enthusiastic comments for their cleanliness, comfort, and even charm,[18] and Thomas Hart Benton was ecstatic after his tour of Lowell in 1857.[19]

Many historians have tended to discount heavily the more favorable accounts of the conditions of life and work in these early textile factories. Abbott, by implicitly using as a standard the opinions of 1910 on such matters as sanitation, reached a bleak judg-

[13] Charles Lyell, *A Second Visit to the United States of North America*, 2 vols. (London, 1849), I, 109–10.

[14] Friends of American Industry, New York Convention, *Report on the Production and Manufacture of Cotton* (Boston, 1832, report of a committee, P. T. Jackson, chairman), 12–13; see also Luther, *An Address*, 22–23, 23n.; [Bigelow], *Review of "An Address . . . ,"* 17, 27; Robinson, *Loom and Spindle*, p. 76; William Scoresby, *American Factories and Their Female Operatives . . .* (Boston, 1845), 32–34.

[15] Norman Ware, *The Industrial Worker, 1840–1860* (Boston, 1924), chap. viii, x.

[16] [Bigelow], *Review of "An Address . . . ,"* p. 21; Robinson, *Loom and Spindle*, 194–5.

[17] Caroline F. Ware, *Early New England Cotton Manufacture* (Boston, 1931), 251–2.

[18] Alfred Bunn, *Old England and New England*, 2 vols. (London, 1853), I, 195; Robinson, *Loom and Spindle*, 89–91; Miles, *Lowell*, 67–76; Scoresby, *American Factories*, 57–62, 28–29; Lucy Larcom, *A New England Girlhood* (Boston, 1889), *passim*.

[19] See Benton's speech in Lowell, 16 Jan. 1857, quoted by Charles Cowley, *Illustrated History of Lowell*, rev. ed. (Boston, 1868), 154–5.

ment about the situation in that regard in Lowell.[20] Ware concluded her study by saying that "on the whole, the terms of employment reduced the mill workers before 1860 to a status which planters . . . could well liken to that of slaves." [21] Shlakman cited the strikes at Chicopee and elsewhere as evidence that, in 1834–36, "there were groups of women who saw the solution to an attack on their standards in a fight to maintain these rather than in escape from the factory towns. It meant that for significant numbers, escape was impossible." [22] A more recent writer has declared that a group of young women from Lowell who journeyed to the state of Washington in 1864 "could hardly have been operatives in the mills, since the factories had been shut since the beginning of the Civil War, and the cost of passage to the Northwest was over $300." [23] This implies a disbelief of the assertions that some mill girls saved "hundreds and thousands of dollars." Green, citing the money wages paid by the Holyoke cotton mills in the early 1850's, says that they were "little more than enough to live on." [24]

These conclusions do not inspire much confidence. Some of them rest on standards of judgment which are merely implied, or they falsely assume a homogeneity in the status of all cotton mill employees, or they omit certain relevant factors from consideration. But the fundamental fault is that they are based on sources which do not lead to a firm and unambiguous conclusion. The primary sources cited above, for instance, will support a variety of views. Wages were high enough that some mill women saved thousands of dollars, but wages were so low that hundreds of mill women were forced into prostitution. Working conditions were very good, except that the factories were overheated, stuffy, and lighted by noxious and inadequate lamps. Everybody in New England had an equal chance to succeed, but there was monopoly, an aristocracy of wealth, and a high degree of class stratification. Some mill women could not escape from the factories, but there was no permanent factory population. The hours of labor were intolerably long, but not so long as in other occupations which were more tedious and exhaust-

[20] Edith Abbott, *Women in Industry* (New York, 1910), pp. 125–30.
[21] Ware, *Early New England Cotton Manufacture*, 268.
[22] Vera Shlakman, *Economic History of a Factory Town: A Study of Chicopee, Massachusetts* (Northampton, Mass., Smith College Studies in History, Vol. XX, 1934–1935), 63.
[23] Hannah Josephson, *The Golden Threads: New England's Mill Girls and Magnates* (New York, 1949), 289n.
[24] Constance McLaughlin Green, *Holyoke, Massachusetts* (New Haven, 1939), 44.

ing. The boarding houses for operatives were disgracefully congested and uncomfortable, but they were more comfortable than the typical living quarters of the time.

Probably every one of these assertions is true regarding some cotton mills or some operatives; none of them is true regarding all cotton mills or all operatives. Various groups must be distinguished; the relative size of these groups must be determined; the trends must be established. Handlin has suggested that the ante-bellum immigrants in Boston divide into two broad groups. An immigrant who could take up in America the occupation which he had followed in Europe adjusted quickly and easily to his new home, but those who suffered a complete occupational rupture "faltered, hesitated, were overwhelmed and lost. . . ."[25] Similarly, Ashton has pointed out that the Industrial Revolution in England had quite different effects on the welfare of various segments of the working classes.[26]

But such clarifying distinctions can seldom be derived from pamphlets and periodicals. These publications do not contain evidence at all, if that word be taken to signify factual statements which are precise as to subject, time, and place. They contain, rather, the conclusions of the author, buttressed with a modicum of ambiguous data. Most of these contemporary documents were self-serving testimony, and the authors reached contradictory conclusions. Historians, lacking an independent means of verification and rejection, have often chosen according to their own predilections from this mass of conflicting sources. Finding no reliable evidence, they have been unable to sift it into their own judgments; they have merely accepted the more congenial conclusions imbedded in the primary sources.

The deplorable nature of newspapers and pamphlets as sources on the conditions of life and work has long been recognized. In 1910, Sumner felt constrained to warn her readers in a remarkable passage: ". . . in many instances statements of fact are directly contradictory. So far as the material exists, great care has been exercised to present both sides in all matters of controversy, as closely as possible in the original words, and always with the authority cited. The reader must take into consideration the character of the material and the relative value of the sources of information, just as he would in reading similar material of recent pub-

[25] Oscar Handlin, *Boston's Immigrants, 1790–1865: A Study in Acculturation* (Cambridge, 1941), 59.

[26] T. S. Ashton, "The Standard of Life of the Workers in England, 1790–1830," *Journal of Economic History*, Supplement IX (1949), 19–38.

lication."[27] This is really no solution at all. If the historian lacks a basis for appraising his sources, the reader will certainly not have one. A historian, however confused and uncertain, is scarcely justified in passing his dilemma on to his audience. It remains, then, to resolve the dilemma, and this cannot be done solely on the basis of the source materials which have been customarily used.

Recent writers have pioneered a promising approach to this problem by using the records of business firms.[28] These records have many advantages for the historian. Whereas pamphlets and newspapers are vague and generalized, business records are specific and often quantitative. Whereas public documents are often meant to mislead the audience, the internal records of a firm are intended to give accurate information. Payrolls, ledgers, intrafirm memoranda and correspondence, can be made to yield up reliable evidence on the topics under consideration here. How much of his income could the average textile worker save in 1850? To what extent was there a permanent factory population in 1850? The next three sections of this paper are devoted to case studies relating to these questions.

II

The Lyman Mills at Holyoke in 1850 had only one mill, which manufactured coarse cotton goods. Due to the depressed conditions in the industry, this mill ran at a loss in 1850, and at half capacity the following year. But in early 1852 the demand for textiles increased, and Mill No. 1 went back on full production. The company also completed construction of Mill No. 2 and equipped it to make sheer lawns, a finer fabric than was then being made generally in the United States. This mill went into production in July, 1852.[29] As output rose, the company quickly ran into a shortage of labor. Therefore Charles Cochran, a second hand in Mill No. 2, was dispatched to Glasgow to recruit skilled women weavers who were competent to work on the finer fabrics. Cochran was in Glasgow at

[27] US Senate, 61st Cong., 2nd Sess., Doc. No. 645, *Report on Condition of Woman and Child Wage-Earners in the United States* (Washington, D. C., 1910), Vol. IX, *History of Women in Industry in the United States*, by Helen L. Sumner, p. 34.

[28] Shlakman, *Economic History of a Factory Town*; Green, *Holyoke*; Evelyn H. Knowlton, *Pepperell's Progress: History of a Cotton Textile Company, 1844–1945* (Cambridge, 1948), 58–66, 153–72; Nancy P. Norton, "Labor in the Early New England Carpet Industry," *Bulletin of the Business Historical Society*, XXVI (1952), 19–26.

[29] Green, *Holyoke*, 34–40.

least from 9 March to 2 April 1853.[30] Sometime after 7 April, 67 women left Glasgow for Holyoke, where they arrived by 30 May 1853.

The passage money for each woman from Glasgow to Holyoke was advanced by the company. In order to keep track of these debts, a special ledger was opened for the 67 women, and an individual account was kept for each person.[31] A simple method of bookkeeping was employed. All earnings of each woman were credited to her account, and all expenditures in her behalf were debited. As soon as earnings exceeded debits, the account was closed and the balance due to the employee was paid in cash. The following table shows one account from the ledger:

MARY PHILLIPS

[Debits]

1853		
May 30.	To Passage Money expended Glasgow to Holyoke	20.49
July 5.	" amt. pd. E. G. Turner 1 pr. shoes.	1.00
June 30.	" " " H. Hutchins, dry goods.	1.85
July 4.	" Board to date.	6.87
Aug. 1.	" " " "	4.12
" "	" Cash.	5.27
" 29.	" Board to date.	5.50
Sept. 8.	" Cash.	5.56
		50.66

[Credits]

1853			
June 30.	By amt. due on June pay roll.		15.14
July 30.	" " " " July " "		7.66
" "	" " " " " " "	(L.W.R.)	7.56
Aug. 27.	" " " " Aug. " "		20.30
			50.66

Let us first consider the debit entries in this ledger which reveal the pattern of expenditures. (a) *Passage money.* On May 30 each account was charged $20.49 for the passage from Glasgow to Holyoke. (b) *Shoes.* Fifty-five accounts show payments to E. G. Turner on July 5 of amounts ranging from $0.58 to $2.00 for either one or two pairs of shoes. (c) *Dry goods.* Fifty-one accounts show payment on June 30 to H. Hutchins of amounts ranging from $0.75 to $4.18, almost certainly for clothing. These entries, coming during

[30] Bill presented to Charles Cochran by John Gebbie, solicitor, of Glasgow, Box LW-1, Lyman Mills Papers.

[31] Ledger LH-1, *ibid.*

the summer, suggest that most of these immigrants almost immediately acquired in Holyoke better clothing than they had in Glasgow. (d) *Postage for letters*, at the rate of $0.24 for each letter. Fourteen of the women sent one letter each; four sent two letters each. (e) *Board*. Many of the accounts are debited on this score $5.50 every four weeks, showing a standard rate for room and board in the company's boarding houses of $1.375 per week. A few of the women evidently boarded in private families. Some others must have paid their board bills in cash, since two accounts do not show any debits at all under this heading. (f) *Cash*. Nearly all of the accounts show cash advances of varying amounts. It is not possible to tell how the individual operatives spent these cash advances.

Let us now consider the time required to pay off the initial debt of $20.49 for passage money. Fifty-six of the 67 women repaid the debt in full from their own earnings in the mill. Leaving aside temporarily the exceptions, these 56 accounts were closed as follows (totals are cumulative):

May 30, 56 accounts were opened.
By July 31, 9 were closed.
By August 31, 38 were closed.
By September 30, all 56 were closed.

All of these 56 women were free of debt within four months after their arrival in Holyoke.

What portions of their incomes were these 56 women able to apply against their debts? Their monthly earnings, with a few exceptions, ranged from $16 to $21. In no instance had total earnings reached $80 before the entire debt had been liquidated; in some instances total earnings were still less than $40.[32] Every one of these women thus found it possible to repay a debt of $20.49 from total earnings of less than $80. The ratio of savings to income was in each instance at least 25 per cent, and in several cases more than 50 per cent.[33] Meanwhile these women not only supported themselves but spent abnormal sums for clothing and shoes.

These women were evidently suspicious that they had been overcharged for their fares from Scotland, because they chose a committee of five women to examine the records and to consult about

[32] The entries for earnings in Ledger LH-1 have been checked against the entries in the payroll ledgers (Payroll Ledgers LX-2, LX-3, LY-1, Lyman Mills Papers), and have been confirmed in every case.

[33] Income spent to repay a debt is obviously equivalent to savings, in the sense that it is withheld from current consumption.

the matter with Jones T. Davis, the agent of the company. Having carried out their duties, the members of the committee signed a statement: ". . . we are satisfied that the sum of $20.49 charged by the Hadley Falls Co. is just and right and should be satisfactory to all – Mr Davis has promised to charge us with only three weeks board [instead of four weeks] at the next settling and we think that is just and fair. Holyoke July 16, 1853." [34]

Eleven of the 67 women did not repay their debts entirely from their own earnings. One never appears on the payrolls of the company, her debt being repaid in cash by another person. Three others repaid their debts partly in cash, partly from their earnings. The remaining seven did not finish paying off their debts at all. Six of them absconded, all during July; the seventh was "sent away" for some reason in early August. The company incurred losses from these bad debts of $101.41. It is curious to note that these seven women were prolific letter writers, four of them being charged for postage on one letter each, three on two letters each. But of the entire group of 67 women, only four were charged for postage on two letters each, only fourteen on one letter each.

Some other evidence is available bearing on the ratio of savings to income. Two women, Christina and Janette McKimm, brought a brother with them from Scotland. By July 31, each of them had paid off her own passage money; by October 7, they had also paid back their brother's fare. Other data relate to immigrants' remittances sent by these women back to Scotland. Elizabeth McQuerance arrived in Holyoke on 30 May 1853. But on 28 March 1854, she bought a draft for £3 ($15) in favor of Abbey McQuerance in Scotland; on 6 July 1854, she bought another draft in favor of the same person for £20 ($100).[35] Her total earnings at the Lyman Mills by March 28 were $220.52; her total earnings there by July 6 were $298.50. Since Margaret and Sarah McQuerance also arrived in Holyoke from Scotland about 1 June 1854, perhaps part of the $100 draft was not Elizabeth's earnings, but certainly most of it was. Margaret and Martha Bittles first appear on the payroll as weavers on 2 July 1853; on 14 November 1853, they bought a draft for £17 ($85) in favor of Mary Bittles in Scotland. These large remittances were probably quite exceptional, but they did happen.

This evidence on the ratio of savings to income should be assessed in the light of several considerations. These were single women, and

[34] Statement signed by Christina McKimm *et al.*, 16 July 1853, Box LW–1, Lyman Mills Papers.

[35] Receipts for these drafts are in Box LW–1, *ibid.*

(with a few exceptions) they had no dependents. They had a skill when they arrived in America as well as jobs with a firm that badly needed persons with that skill. The years 1853 and 1854 were prosperous in the textile industry, so that these women were able to work full time. They were recent immigrants, and their expenditures in America were certainly conditioned by the lower standard of living to which they had been accustomed in Scotland. Finally, they were inclined toward thrift by unusual considerations. The company was doubtless anxious to recoup the passage money quickly, and it may have resisted making further cash advances until these initial debts were repaid. Mitigating this factor would be the company's wish to avoid giving offense to its skilled workers in a period of labor shortage. It also seems that many immigrants regarded remittances to their families abroad as a fixed obligation.[36] And the clamor from abroad could be very compelling.[37]

The above evidence, then, indicates what was possible for a group of single, skilled, immigrant women in a prosperous period. It does not show what was typical of textile workers, and doubtless the ratio of savings to income for all employees in the industry was substantially lower than the 25 per cent to 50 per cent exhibited by this group. But the above-cited assertion that the employees of one cotton mill saved 11 per cent of their incomes for a period of four years is quite possible. It is also possible that some mill girls saved, in 10 years, $500 to $1,000 by dint of single-minded diligence. So those Lowell women who journeyed to the state of Washington in 1864 might well have been mill girls. It is not true that wages in Holyoke in the early 1850's were "little more than enough to live on."[38] Nor is it true that, "until the importation of girls from Glasgow to do fancy weaving for the Amoskeag [company at Manchester, New Hampshire] in 1867, girls came to the mills as unskilled workers."[39]

The conclusions here need not contradict earlier studies relating

[36] Marcus Lee Hansen, *The Atlantic Migration, 1607–1860* (Cambridge, 1940), 281–2.

[37] Edward Everett Hale declared in 1852 that he had never seen a letter from Ireland to an immigrant in the United States "which contained much more than congratulations that the reader had arrived in a land of liberty, — and acknowledgements of remittances, or requests for them." Edward E. Hale, *Letters on Irish Emigration* (Boston, 1852), 6.

[38] Green, *Holyoke*, 44.

[39] Ware, *Early New England Cotton Manufacture*, 209. The Amoskeag Company recruited skilled weavers in England as early as 1865. See Daniel Creamer, "Recruiting Contract Laborers for the Amoskeag Mills," *Journal of Economic History*, I (1941), 42–56.

to working-class *families* in the 1850's. Such a family, according to Martin, typically "spent at least half its income for food, probably at least a fourth for shelter, and most of the rest for clothing."[40] Certainly less than 10 per cent remained for all other goods and services.[41] If these estimates be true, the ratio of savings to income must have been negligible, or even negative. For the present group of 56 mill women, on the contrary, shelter and food combined took less than 33 per cent of income. Quite possibly the structure of wages and prices was such that, whereas single persons could save large portions of their incomes, persons with dependents were hard driven to subsist.

III

There can be little doubt that real incomes at Holyoke were high in comparison with real incomes in Scotland. From 1853 to 1857 the Lyman Mills periodically sent an agent to Glasgow to recruit employees, mainly skilled weavers. These agents had little trouble filling their quotas. This flow of labor from Scotland to the United States resulted from three factors: (a) the strong demand for labor in Holyoke, (b) the relatively degraded status of textile workers in Scotland, and (c) the low costs of transatlantic passage. It seems appropriate to consider each of these factors briefly.

After the Lyman Mills completed Mill No. 2 in 1852, it did not greatly expand its plant capacity. The number of spindles in Holyoke rose only from 53,000 in 1855 to 61,000 in 1865.[42] The persistent demand for workers did not, therefore, arise from the company's desire to expand its labor force. The Lyman Mills, far from trying to increase the number of its employees, was fighting desperately to keep that number from falling. The cause, as will be shown below, was an extremely high rate of labor turnover. The company could get workers; it could not keep them. In view of the high possible ratio of savings to income in Holyoke, this is a remarkable fact.

The company's desire to stabilize its labor force was strikingly demonstrated during the short but sharp depression of 1857–58.

[40] Edgar W. Martin, *The Standard of Living in 1860: American Consumption Levels on the Eve of the Civil War* (Chicago, 1942), 398.

[41] *Ibid.*, 401.

[42] Francis DeWitt, *Statistical Information Relating to Certain Branches of Industry in Massachusetts, for the Year Ending June 1, 1855* (Boston, 1856), 220; Oliver Warner, *Statistical Information Relating to Certain Branches of Industry in Massachusetts, for the Year Ending May 1, 1865* (Boston, 1866), 252.

Stringencies in the money markets required that the Lyman Mills should drastically reduce its current expenses. The weaving rooms in Mill No. 1, the coarse goods mill, were almost completely shut down from December, 1857, until late March, 1858. But Green is wrong in saying that Mill No. 2 also "closed completely for a time."[43] Instead of laying off its employees, the company cut back from six days a week to three days in November, 1857; went onto a four-day schedule in April; and back to six days in May, 1858. The following table shows these adjustments:

TABLE 1

ADJUSTMENT OF THE LYMAN MILLS, MILL NO. 2, TO THE DEPRESSION OF 1857–58 [a]

Date of Payroll	No. of weavers on Payroll, Mill No. 2	Work Schedule	Total weaving Payroll, Mill No. 2
1857, July 25	162	Full-time	$2,628.54
Aug. 29	192	"	3,795.49
Sept. 26	200	"	3,188.91
Oct. 24	184	"	3,252.87
Nov. 28	175	Half-time	1,988.89
Dec. 31	156	"	1,591.19
1858, Jan. 30	161	"	1,588.65
Feb. 27	154	"	1,516.12
March 27	160	"	1,530.93
April 24	174	Two-thirds	2,263.10
May 29	172	Full-time	3,552.27
June 26	169	"	2,831.48
July 31	168	"	3,195.62

[a] Payroll Ledgers LY–2 and LY–3, Lyman Mills Papers.

Jones Davis, the agent at Holyoke, reduced wage rates and decreed half-time employment,[44] but he was very loath to institute layoffs. Some employees left of their own accord. These voluntary departures, not layoffs, probably account for the decline in employment from September to December, 1857. On 11 March 1858, Davis wrote to George W. Lyman, now Treasurer of the company: "Most of the best work people have left the place and others are following every day. . . . It will cost a large sum of money to supply the Lyman Mills with a new set of work people, particularly the No. Two Mill."[45] It should be noted that, after the company went back

[43] Green, *Holyoke*, 59.
[44] J. T. Davis to Stephen Holman, 24 Oct. 1857, Box LW–1, *ibid.*
[45] Quoted by Green, *Holyoke*, 60.

on full time and even overtime in May, 1858, employment remained constant.

Offers of employment at the Lyman Mills found a ready audience in Scotland. Numerous letters came to Stephen Holman, the company's paymaster who handled the Holyoke end of its foreign recruiting activities, from persons in Glasgow offering to send groups of skilled workers to the United States. "In regard to Girls wanting out," wrote one man from Glasgow in 1856, "I have applications almost every day from decent Girls anxious to get away . . . I have to mention that there is a man of the name of George Brown who has seven of a family and two Girls and two boys of his are fit to work he is very anxious to get out, and I would like to have [him do so] as soon as possible if you could take them and they wish to settle down and keep House if they are once out" [46] Several months later, George Brown himself wrote to Holman, saying that he would leave for Holyoke in the summer of 1857, bringing with him his two daughters, "good Weavers," and two sons "able to work in the Factory." [47] Brown added that "if you are in want of any Weavers by sending me the order I will bring them along with me. . . ."

A striking instance concerns Elizabeth Bowie, whose name appears on the payroll of 24 November 1855, in Mill No. 2 of the Lyman Mills.[48] Soon after that she returned to Scotland. She wrote to Holman, 19 June 1856, that a friend of hers, "a very descent respectable young woman and a noble weaver," was eager to come to Holyoke.[49] She then continued: ". . . I want to get out Myself as My husband has been out of employment this some time Back and as trade is pretty dull in his line all over scotland and no views off it geting any Better we should like very Much to come Back. . . ." The immigrants to America wrote glowing accounts of their life there to relatives in Scotland. One of Holman's recruiting agents who claimed to have seen several of these letters wrote to him that "everey one of them gives you great praise for your kindness to them since they Landed in knew york they are telling their freinds what A butifule place Holyock is and they are pleased with their knew work. . . ." [50]

In these circumstances, the recruiting agents could be highly selective. They refused to recommend the employment of persons

[46] David Daig to Stephen Holman, 10 April 1856, Box LW-1, Lyman Mills Papers.
[47] George Brown to Stephen Holman, 3 Feb. 1857, *ibid.*
[48] Payroll Ledger LY-2, *ibid.*
[49] Mrs. Hugh Bowie to Stephen Holman, 19 June 1856, Box LW-1, *ibid.*
[50] Jane Wallace to Stephen Holman, 2 Dec. 1857, *ibid.*

whom they did not know.[51] One agent reported to Holman that "the rest of the girls is from other mills that I knew to be good girls and good weavers of fine cloth they will all have sertifecuts from their employers to sho you when they come to Holyoke. . . ." [52] Even with these restrictive standards, the writer was able to report that "I have got the number you wanted. . . ." In 1858 an agent recruited 16 weavers: "not bad work for three Days. . . ." [53]

To summarize, a pressure outward existed in Scotland; a suction existed in Holyoke; and resistance en route was slight because the costs of transatlantic passage were low. The ships which were carrying huge quantities of wheat and especially cotton from America to Europe brought back human cargoes. It was also the age of the packet lines. Enoch Train & Company operated directly between Liverpool and Boston. In November, 1853, the steerage rate between those points for persons over 12 years of age was $18.[54] The rate was raised to $20 on 14 February 1854. Later that year it was raised again to $25. It was lowered to $22 on 22 April 1856. Of this fare, $2.00 went to pay what was in effect a head tax on all alien passengers disembarked in Massachusetts.[55] Thus a skilled weaver could earn in Holyoke in a month or five weeks the full cost of her passage from Glasgow to Holyoke.

IV

This section studies how long the workers imported from Scotland by the Lyman Mills remained in the employ of the company. It relates to the more general question of the extent to which there existed a permanent factory population prior to 1860.

[51] David Daig to Stephen Holman, 10 Apr. 1856, *ibid.*

[52] Jane Wallace to Stephen Holman, 2 Sept. 1857, *ibid.*

[53] Gilbert Wilson to Stephen Holman, 3 Sept. 1858, *ibid.*

[54] Printed circulars of Enoch Train & Company and its Boston agents, *ibid.*

[55] This tax had a tortuous history. The Passenger Act of 1837 in Massachusetts provided for a head tax on alien passengers. This tax was stricken down by the U. S. Supreme Court on 7 Feb. 1849 (*Smith vs. Turner* and *Norris vs. City of Boston*, 48 US 282, 7 Howard 283, 12 L.Ed. 702). Massachusetts then passed a new act requiring the master, owner or consignee of every ship bringing alien passengers to the state to post a bond of $1,000 for each such person which would be forfeited if the person became a public charge at any time during his life. In the case of able-bodied aliens, this bond could be commuted by payment of a head tax of $2.00 for each alien. The shipping companies, rather than post the impossible aggregate of bonds, paid the commutation fee whenever they were permitted to do so (Hale, *Letters on Irish Emigration*, 24–27). A similar act in New York was declared unconstitutional by the U. S. Supreme Court in 1875 (*Henderson et al. vs. Mayor of New York et al.*, 92 US 259).

The method used was as follows. Various memoranda of the company gave the names of persons in several groups of imported workers. The individuals were then traced through the payrolls to determine how long they stayed with the company. This procedure involved a certain margin of error, for reasons which should be stated.

(1) The Lyman Mills paid its employees only every four weeks. In the present investigation, any person who does not appear on a single Lyman Mills payroll is counted as a separation. This was deemed desirable to provide a measure of comparability with modern studies of labor turnover, in which it is customary to clear the rolls every four weeks. Some employees, as noted in Table 2 below, did leave the company only to return at a later date. But this factor does not substantially affect our results. Although the Lowell girls of the 1830's may have returned to their farm homes each summer, this was not true of the immigrant workers two decades later.

(2) The payrolls are sometimes ambiguous. Employees were not listed in any ascertainable order, and they were identified by name only. Since many of them could not sign their names, the paymaster used his own discretion about spelling. Sometimes he altered the spelling; sometimes his writing is illegible. The analyst is compelled to decide whether two entries on different payrolls actually designate the same person, even though the spelling of the name has altered slightly. Although several considerations were weighed in making these judgments, they remain judgments.

(3) Some errors undoubtedly resulted from simple oversight. The process of checking each entry on a payroll of 400 names against each entry on another payroll of 400 names, as was done here, involves 160,000 chances to err. This opportunity the writer did not shirk. It seemed foolish to recheck and countercheck the data in order to reduce mistakes from this factor, when mistakes from other factors would still remain. The computations were made once carefully, but they were not made more than once.

(4) We must consider the possibility that some women married while in the employ of the company, so that the name would change but the person would remain. The writer doubts that this happened in many cases. Married women were forbidden remunerative employment by the culture patterns and domestic exigencies of the time. Marriage in most cases was quickly followed by motherhood. At the Lyman Mills, most women employees lived in boarding houses which were owned or supervised by the company. The Lawrence factory at Lowell about 1835 had 1,000 women employees, of

whom only 11 were married and 19 widowed.[56] The marked disproportion between the sexes in the mill towns should also be considered. The three cotton mills in Holyoke in 1855 employed 1,035 females, but only 458 males,[57] of whom many were boys. The population of the town of Holyoke[58] in that year was 54.4 per cent females.[59]

These sources of error would tend consistently to minimize the length of tenure, since the analyst is unlikely to have found many continuities which did not exist, but he certainly missed some continuities that did exist. It is felt that a margin of error of 10 per cent is ample allowance for the combined effect of these factors. All discussions in the text based on Tables 2, 3, and 4, take into account this allowance for error.

The first case study of job tenure at the Lyman Mills concerns the 66 women weavers from Scotland who arrived in Holyoke in late May, 1853, discussed above in Section II. The relevant data pertaining to this group are presented in complete form in Table 2.

Table 2 provides three conclusions. More than two-thirds of this group remained in the employ of the Lyman Mills for less than three years. Perhaps 30 per cent of the group may be counted as relatively permanent employees who stayed for three years or more. Several women were separated, in the sense that they were not employed for four consecutive weeks, but later returned to the payroll (Column 5).[60] It should be noted that the entries in the table for 25 July, 1857, and all subsequent dates, are for most purposes useless, since the difference between successive entries is more than wiped out by the possible margin of error. Table 3, which has been greatly compressed, relates to a larger sample.[61]

The conclusions reached in Table 2 are substantially confirmed by Table 3. More than two-thirds of the imported workers remained with the Lyman Mills for less than three years; perhaps 30 per cent

[56] H. C. Carey, *Essay on the Rate of Wages* . . . (Philadelphia, 1835), 88n.

[57] DeWitt, *Statistical Information . . . Massachusetts . . . June 1, 1855*, p. 220.

[58] The word "town" is used of course in its New England sense, not in the more general sense of an urban community.

[59] Francis DeWitt, *Abstract of the Census of the Commonwealth of Massachusetts, . . . 1855 . . .* (Boston, 1857), 24.

[60] This factor does not greatly affect any specific entry.

[61] In addition to the 66 women included in Table 2, Table 3 covers the following groups: (a) 33 women weavers, 11 piecers, and 7 fly-frame girls, who arrived in Holyoke about 1 June, 1854; (b) 34 persons (of whom 29 were women weavers), who arrived in Holyoke in late October, 1855.

TABLE 2

Job Tenure of Sixty-Six Women Weavers Imported from Glasgow to Holyoke by the Lyman Mills, May 1853 [a]

1	2	3	4	5	6
			(Per cent)		
1853, July 2	0	66	100.0	0	176
July 30	1	66	100.0	0	152
Aug. 27	2	58	87.8	0	142
Sep. 24	3	57	86.3	0	149
1854, July 1	12	46	69.6	0	167
Oct. 28	15	35	53.0	0	153
1855, Jan. 27	18	24	36.3	0	159
July 28	24	25	37.8	5	180
1856, July 26	36	15	22.7	1	171
1857, July 25	48	10	15.1	1	162
1858, July 31	60	11	16.6	3	168
1859, July 2	72	3	4.5	0	161
1860, July 28	84	4	6.0	3	180
1861, July 27	96	3	4.5	2	155
1862, June 28 [b]	108	2	3.0	0	144
1863, July 25	120	3	4.5	2	100

[a] Ledger LH-1, Payroll Ledgers LY-1 to LY-4, LX-1 to LX-7, Lyman Mills Papers.
[b] Mill No. 2 was entirely closed from June, 1862, to February, 1863. Mill No. 1 was closed, except for supervisory and maintenance employees, from June, 1862, to September, 1865 (Payroll Ledgers LY-4, LX-6, LX-7, *ibid*).

Key: 1. Date of Payroll.
2. Time lapsed, in months, since payroll of July 2, 1853, when names of the 66 women were first listed.
3. Number of original 66 women still on payroll.
4. Percentage of original 66 women still on payroll.
5. Number of original 66 women on payroll at this check-date, but not on payroll at immediately preceding check-date.
6. Total number of weavers on payroll at Mill No. 2.

TABLE 3

Job Tenure of 151 Persons Imported from Glasgow to Holyoke by the Lyman Mills, 1853 to 1855 [a]

Time worked, in years	Number of Persons	Percentage of original group of 151 persons
Less than 1	58	38.4
1-2	41	27.1
2-3	26	17.2
More than 3	26	17.2

[a] Ledger LH-1, memoranda in Box LW-1, Payroll Ledgers LY-1 to LY-5, LX-1 to LX-7, Lyman Mills Papers.

of them stayed with the company for three years or longer. The persons included in Table 2 were representative of the larger group.

It remains to introduce a control group which includes (a) native-born workers, and (b) men. This was done by taking the entire payroll at Mill No. 2 on 29 September 1860, amounting to 440 persons, and following each one of them backwards through the payrolls to determine how long he (or she) had been working in that mill. The results are shown in Table 4.

TABLE 4

JOB TENURE OF 440 PERSONS ON THE PAYROLL OF MILL NO. 2, THE LYMAN MILLS, 29 SEPTEMBER 1860 [a]

Time worked, in years	Number of Persons	Percentage of original group of 440 persons
Less than 1	252	57.2
1–2	63	14.3
2–3	22	5.0
More than 3	103	23.4

[a] Payroll Ledgers LY–2 to LY–4, Lyman Mills Papers. The labor force in this mill was roughly constant in size from 1857 to 1860, so no bias is introduced by tracing the individuals backward from 1860 instead of forward from 1857.

This table substantiates the stated conclusions based on Tables 2 and 3. For the entire labor force, as for the smaller samples of immigrants, it remains true that two-thirds worked for the company less than three years, while perhaps a third stayed for three years or longer. But Table 4 also deviates in major respects from Tables 2 and 3. Separations in the first year after employment were much more common for the total labor force than for the 151 workers imported from Scotland. But this difference was substantially effaced in the next two years, so that the percentage of each group who remained three years or more is the same.

This differential behavior between the two groups can be explained tentatively. Immigrants were not aware, immediately upon their arrival in Holyoke, of alternative means of support, so they were likely to keep their original jobs at least a year. But, thereafter, as their personal relationships and general knowledge expanded, this difference disappeared. They moved on to better jobs elsewhere. Or they were married and left the labor force entirely, as seems probable in the majority of cases. The seven women who left Holyoke without repaying their passage money to the company were prolific letter writers, as noted above (Section II). It is plaus-

ible to suppose that these letters were written to friends elsewhere in the United States, and that, having established contact by mail, these immigrants left Holyoke to join their friends.

Judging from the viewpoint of job tenure, the labor force at the Lyman Mills was divided into two broad groups. About 70 per cent of the workers were short-term employees who remained less than three years. These short-term employees were most common in the carding and weaving rooms, which also contained a higher ratio of women and boy employees than did the spinning and dressing rooms.

But there was a group of relatively permanent employees amounting to perhaps 30 per cent of the labor force. They were most common in the spinning and dressing rooms, which contained a higher ratio of male employees. This group contained two main subcategories. Some were men holding skilled, highly paid jobs. Of the 36 persons who were overseers, second hands, dresser tenders, and section hands [62] on 29 September 1860, 20 had worked for the company three years earlier.[63] Only 103 of the total labor force of 440 had worked as long as that. These few skilled occupations account for 20 per cent of the total number of three-year employees. The second subcategory of relatively permanent workers was composed of a minority of the women and boys. Perhaps 20 per cent of all women employees had worked for the company three years or longer.

These conclusions seem, at first glance, to conflict with contemporary testimony on this topic. Boott Mill No. 2 at Lowell reported in 1841 that its 203 women employees had worked there an average of nearly five years.[64] Miles, after a study of the subject in eight Lowell mills about 1845, concluded: "The average time during which these female operatives work in the mills is between four and five years." [65] The discrepancy can be explained. In these contemporary studies, the ambiguous word "average" was used to desig-

[62] In the usual modern terminology, these jobs would be designated foreman, assistant foreman, slasher tender, and loomfixer.

[63] In the Pepperell mills at Biddeford, Maine, from 1870 to 1920, the managerial ranks — agents, superintendents, overseers — "stayed with the company for long periods." Knowlton, *Pepperell's Progress*, 153. The writer found a similar result in a study of the managerial ranks in the anthracite industry in 1902; see an article based on this research which will appear soon in the *Journal of Economic History*.

[64] *Massachusetts House Document No. 50, 1845*, reprinted in John R. Commons *et al.*, editors, *A Documentary History of American Industrial Society* (Cleveland, 1910), VIII, 146.

[65] Miles, *Lowell*, 194.

nate the arithmetic mean, which was pulled up by the minority of employees with long tenure. The arithmetic mean is not very useful unless supplemented by information about the dispersion of items. Miles, fortunately, published his frequency distributions, so that we can ascertain the typical experience as well as the "average." [66] Of the total of 1,518 women covered by his study, nearly half had worked less than three years, and 911 less than four years. So the average was not typical. Even the raw data used by Miles are suspect, since they were collected by questionnaires from overseers, who in turn collected them from the employees. Miles' procedure probably differed from the present one in two other respects. He did not count a temporary separation in employment as a break in the continuity; and he counted the total length of employment in the Lowell mills, even though the person had moved from one mill to another. Both of these factors would inflate his results, as compared with the present study.

Labor turnover at the Lyman Mills may have been exceptionally high because of noneconomic considerations. Living conditions in the town were far from ideal, at least by modern standards.[67] Housing was scarce and unattractive; rents were relatively high. Holyoke had few trees and much dust. It was unsanitary, so that serious epidemics occurred. Perhaps other persons agreed with the woman who wrote to Stephen Holman from Fall River: "i receved your letter and thenks you for your kind offer to us i think i might have likt your work very well but i am shure that i would not like the place" [68]

Cotton mills in other locations, however, were beset by the same problem which haunted the Lyman Mills. In the year 1853 the two Pepperell mills at Biddeford, Maine, hired 866 people, "'more than the average number at work in the mills." [69] Since Pepperell was not expanding its labor force at the time, its rate of turnover was more than 100 per cent per year. The Hamilton Manufacturing Company at Lowell was forced to send a recruiting agent to northern New York and Vermont in search of new employees.[70] This agent sent 18 women to Lowell in April, 1859. Upon arriving there, they

[66] *Ibid.*, 165–91.

[67] Green, *Holyoke*, 28–29n, 41–44.

[68] Mary Morrison to Stephen Holman, 28 May 1856, Box LW–1, Lyman Mills Papers.

[69] Knowlton, *Pepperell's Progress*, 59.

[70] This account is based on several memoranda in the Miscellaneous administrative papers, Vol. 19, Hamilton Mfg. Co. Papers, Baker Library, Harvard University.

signed a statement: "Received of the Agent of the Hamilton Mg Co. the sums set against our names, being the cost of our travelling expenses from Malone N.Y. to Lowell, which sums we hereby agree to repay said company from our earnings in monthly payments of two dollars each it being understood by both parties that to each person who shall well and faithfully remain and work for said company for eighteen months, shall be paid back again the whole amount so collected." The agent sent another six women to the company in July, 1859; 16 more in August. From these recruiting activities, the Hamilton mills got 40 employees. But not for long. Only 27 of them remained with the company for four months. The other 13 left before they had repaid the money advanced them to get to Lowell, leaving the company with bad debts amounting to $97.08.

In view of the short tenure of most employees, the Lyman Mills required every new employee to stipulate "that whenever it shall be my intention to quit their service, [I shall] give the Agent or Overseer under whose charge I serve, Two Weeks Notice of my said intention, before leaving. And leaving their employ without said notice, shall be a forfeiture and release of all arrearages of wages then unpaid." [71] This provision did not stabilize the labor force. Employees who were brought to the United States from Scotland flowed in a stream through the Lyman Mills. Jones Davis, the agent, wrote to the treasurer of the company in 1857 that the Scottish women were "a source of expense and trouble rather than profit." [72] A year later, one of Holman's recruiting agents in Glasgow wrote to him that she was "very sorry to hear that the girls has turned out so bad," some of them having fled from the ship in New York before Holman arrived there to conduct them to Holyoke.[73] And by 1858, in contrast to 1857, some immigrants who actually went to Holyoke were sending to Scotland letters of complaint. "some of the girls sent home word that you had taken a heavey persentage of their wages," Holman's Glasgow agent reported, "so I had double work in finding others for the end of the month." [74] Under these conditions, the Lyman Mills began to recruit workers in Belgium as well as Scotland.[75]

[71] Register LA–1, Lyman Mills Papers.

[72] Quoted by Green, *Holyoke*, 48–49.

[73] Jane Wallace to Stephen Holman, 8 Dec. 1858, Box LW–1, Lyman Mills Papers.

[74] Same to same, 9 Oct. 1858, *ibid.*

[75] Memorandum labeled "Mr. Mills letter of instructions to me when going to New York to make arrangements for DeWylder [?]," *ibid.*

V

This section tries to assess the significance of the findings reported above. The first question concerns the degree and character of the economic opportunities open to industrial wage earners in antebellum New England. The possibilities for skilled workers are shown by the experience of the 66 women weavers who came to Holyoke in May, 1853. They arrived there owing the Lyman Mills a sum of $20.49 for their passage from Glasgow. Four months later, they were all free of debt. Their real wages were high enough that they could save 25 per cent to 50 per cent of their incomes. Even so, they soon left their jobs. Half of them quit in the first 18 months; fewer than a third remained for three years or longer. That they found more satisfactory situations elsewhere can be inferred from their failure to return to the Lyman Mills, when the company would have been overjoyed to rehire them at any time.

Little evidence is available about these women after they left the employ of the Lyman Mills. Some became public charges and were deported to Scotland,[76] but this must have been a small fraction who became physically incapable of work; else they could have returned to the mills. Doubtless some of those who left Holyoke went to work in cotton mills elsewhere. But it seems probable, even in the absence of direct proof, that most of them married and withdrew from the labor force.

This high degree of labor mobility was a source of great pride in New England, especially during the early days of Lowell. Elisha Bartlett, first mayor of Lowell and a physician, indignantly denied charges that "there is accumulating here, a permanent factory population, degraded in character, deteriorated and worn out in body, living in a slavish and entire dependence on the mills, and *unable to get away with advantage*! All this is gravely asserted and argued, but a purer piece of fiction was never gendered in the brain of a lunatic. *There is no such class here.*" [77] A contemporary designated this feature as an important attribute of the system of supervised boarding houses for employees in Waltham, Lowell, and elsewhere: "The operatives no longer form a separate caste, pursuing a sedentary employment, from parent to child, in the heated rooms of a

[76] A. G. Goodwin to Stephen Holman, 16 Nov. 1854, *ibid.* Goodwin was superintendent of the Office of the Commissioner of Alien Passengers in Boston.

[77] Bartlett, *Vindication*, 14.

factory; but are recruited, in a circulating current, from the healthy and virtuous population of the country." [78]

But the high rate of labor turnover created serious problems for the early cotton manufacturers. It was not merely that their recruiting activities in Europe were expensive and troublesome. The strong demand for labor in America resulted in high wages, relative to Europe. If the American cotton manufacturers were to meet foreign competition, they had to substitute machinery for labor so as to increase output per man-hour. But, since two-thirds of their labor force consisted of transient employees, they could not use methods which required much skill from the average production worker.

Therefore the employers were highly dependent on a small group of managerial and technical employees. The task of these experts was to devise methods of production which would lower costs while utilizing a labor force composed of "a succession of learners." [79] The rapid pace of technological advance in the United States derived in large measure from this set of circumstances. An automatic stop motion (or cutoff) for drawing frames was invented in the United States and promptly introduced throughout the American industry, but a manufacturer thought it unnecessary in Great Britain where the operatives were more skilled.[80] The substitution of the power loom for the hand loom and of the throstle for the spinning mule proceeded much more rapidly in the United States than in England, "and the consequence is, that female labour here takes the place of the male labour employed in England." [81] Nathan Appleton was boasting, but not idly, when he declared: "It was the Americans who first introduced the manufacture of heavy goods by the application of the least amount of labor to the greatest quantity of raw material, thus producing a description of goods cheaper to the consumer than any heretofore existing." [82]

[78] John A. Lowell, "Patrick Tracy Jackson," in Freeman Hunt, ed., *Lives of American Merchants*, 2 vols. (New York, 1858), I, 564–5. Compare *Chancellor* Harper's comment that the free laborer "may change his employer if he is dissatisfied with his conduct towards him; but this is a privilege he would in the majority of cases gladly abandon, and render the connection between them indissoluble." [William Harper *et al.*], *The Pro-Slavery Argument* (Philadelphia, 1853), 52–53.

[79] Samuel Batchelder, *Introduction and Early Progress of the Cotton Manufacture in the United States* (Boston, 1863), 89.

[80] James Montgomery, *A Practical Detail of the Cotton Manufacture of the United States of America . . .* (Glasgow, 1840), 56–57. Montgomery, a native of Glasgow, was brought to the United States in 1837 as superintendent of the York Mfg. Co. at Saco, Maine.

[81] Carey, *Essay on the Rate of Wages*, 78–79.

[82] Nathan Appleton, *Introduction of the Power Loom, and Origin of Lowell* (Lowell, 1858), 32.

The short tenure of most employees likewise helps to explain the industrial relations of ante-bellum New England. Strikes occurred, but they commonly spluttered out without achieving their ends.[83] In many cases they seem to have been protest demonstrations by a minority of employees.[84] Petitions to the legislature for a shorter workday bore thousands of names.[85] But no stable trade unions were formed before the Civil War, and formalized collective bargaining lay several decades in the future.

The following interpretation, while subject to correction, seems plausible. More than two-thirds of the labor force in a mill worked there less than three years. During this period, few of them developed a sense of group consciousness. Salvation seemed to lie in individual escape, not in collective action directed against the employer. A combination of anger and exuberant defiance produced occasional strikes, but did not suffice to sustain a persistent spirit of group solidarity and self-sacrifice.

Perhaps a third of the labor force in a mill worked there three years or longer. A group consciousness could develop, under certain conditions, in this period of time. But 20 per cent of these long-term employees, or about 5 per cent of the total labor force, were skilled, highly paid men in the managerial or technical ranks. Only severe pressures would force them to unite with the female production workers. The best prospects for trade unionism in a cotton mill were the women workers who remained for three years or more, comprising 20 per cent to 25 per cent of the labor force.

As Abbott observed about these ante-bellum factory workers: ". . . it was easier to bear patiently with unsatisfactory conditions, when one was to have only a very temporary connection with them, than to take either the time or trouble to remedy them. . . . a labor movement is born only when a definite wage-earning class is created which is concerned with the permanent improvement in the condition of that class and is willing to make sacrifices in its behalf." [86] Although a permanent factory population had begun to develop in the cotton industry of New England before the Civil War, it comprised only a minority of the labor force in 1860.

[83] For a description of the strike of 1836 in Lowell, see Robinson, *Loom and Spindle*, 83–86.
[84] Shlakman, *Economic History of a Factory Town*, 121–3.
[85] Ware, *The Industrial Worker*, 134.
[86] Abbott, *Women in Industry*, 129, 131.

THE STATUS OF ECONOMIC HISTORY

A Review Article [1]

Economic history, once regarded by its practitioners as a challenging and untrespassed frontier of knowledge,[2] is no longer an infant among the social studies. As a formal academic discipline it is at least as old as sociology, anthropology, and other more specialized interdisciplinary studies. Its coming of age may be roughly marked by the establishment in the third and fourth decades of the twentieth century of several journals devoted to it. Now, at mid-century, the inauguration of a new journal and the publication of a collection of readings sponsored by two professional associations may be taken as indicating its arrival at maturity.

I

The purpose of the volume under review is "to show the diversity of problems studied by economic historians, to illustrate their use of different kinds of historical sources, and to present a number of the more important concepts and methods in use." At the same time, the editors "wished to include a sufficient number of essays dealing with the same problem, or set of related problems, to show what advances have been made since economic history became an independent discipline." Accordingly, the topics selected were "business units" (Section I, eleven articles, essays, and fragments of larger works) and "money and prices" (ten selections), to which was added a final section on "method" (six articles, plus three introductory essays and a conclusion by the editors).

In the arrangement of Section I the editors have aimed to exhibit not merely the historical development of the business unit, but also the chronological development of economic historiography. Thus, the first selection is from Schmoller's "Historical Development of the Enterprise" (carried under that title) and the second, entitled "Medieval and Modern Commercial Enterprise," from Sombart's *Der Moderne Kapitalismus*. Both selections, in addition to being drawn from larger works, are also pieced together from several parts of the wholes; this, of course, creates difficulties. Schmoller's contribution, in spite of the scope of its title, treats only of "ancient labor associations" and "large-scale enterprises of antiquity." The selection from Sombart belies its title in a similar fashion, for it is concerned almost wholly with medieval commercial enterprise; it has, however, more meat in it than Schmoller's.

The two following articles, "Small and Great Merchants in the Italian Cities of the Renaissance," by Gino Luzzatto, and "The Culture of the Medieval

[1] *Enterprise and Secular Change: Readings in Economic History.* Edited for the American Economic Association and the Economic History Association by Frederic C. Lane and Jelle C. Riemersma. Homewood, Illinois: Richard D. Irwin, Inc., 1953. Pp. xi + 556. $5.00. (The reviewer is obligated to Professors Robert L. Reynolds of the University of Wisconsin and Carlo M. Cipolla of the University of Venice for conversations regarding both the book and the review. They are not, of course, to be held responsible for any of the views presented.)

[2] Cf. J. H. Clapham, "Economic History as a Discipline," *Encyclopaedia of the Social Sciences*, V, 330: "It is at the overlapping margins of disciplines and sciences that the most important discoveries are usually made."

Italian Merchant," by Armando Sapori, deal with a common theme and the same historical era. Like those preceding, both are here translated for the first time; they are both also slightly abridged, although this does not present the problems of the selections from Schmoller and Sombart. Luzzatto, contradicting or at least modifying a conclusion of Von Below (and others, including Sombart) on the prevalence of small-scale enterprise of the period, is at pains to point out the importance of a growing class of merchants who engaged on a large scale in wholesale as well as retail, in "international" as well as local commerce. This interpretation is now common (the article was first published in 1931), having penetrated even to the textbook level; it is, nevertheless, a worthy inclusion in this volume. Sapori disputes Sombart's characterization of the "artisan mentality" of the medieval merchant. Using multitudinous documentation from the Italian archives, he clearly demonstrates the unusual education and wide range of general knowledge of the medieval merchant and the complexity of the more elaborate business enterprises of the time. Like Luzzatto's, Sapori's findings are no longer novel, but it is useful to have these two excellent articles available in English, both because of their content and because of the demonstration of the value of the Italian archives. (This in spite of the fact that the original footnotes were eliminated in the interests of brevity.)

N. S. B. Gras's "Capitalism — Concepts and History" returns to the level of generality implicit in the first two selections (by Schmoller and Sombart). Gras briefly compares his particular concept of capitalism with a few other oversimplified versions and proceeds to his own panoramic view of world history. This piece is followed by a short paper of Raymond de Roover, originally designed as a comment on the preceding, but confined to "The Commercial Revolution of the Thirteenth Century." Thus it returns to the subject treated by Sapori and Luzzatto, whose contributions it also resembles in method. De Roover elaborates on the distinction between petty capitalism and commercial capitalism, brought up by Gras, as exemplified in the traveling and the sedentary merchant, respectively. He shows the transition to have been brought about by the changes in business methods and organization adopted by the merchants of Northern Italy, thus re-enforcing the conclusions of Luzzatto and Sapori. The article is an admirable example of brief, pointed generalization in economic history.

The topic of Italian business leadership in the late Middle Ages is concluded by Frederic Lane's "Family Partnerships and Joint Ventures in the Venetian Republic." In addition to further demonstrating the complexity of business operations of the period and the excellence of the Italian archives as sources for business history, this article provides hints for understanding the incipient relative decline of Venice as a commercial leader.

Oscar and Mary Handlin's "Origins of the American Business Corporation" is a model of careful, exhaustive scholarship; it is, in the reviewer's opinion, the best single selection in the section on business units. Originally undertaken as a part of a larger study in the "revisionist" interpretation of the role of government in the early American economy, the article is a self-contained whole which demolishes the former view, widely held in both scholarly and popular writing, that the corporate form was quickly adopted by American business because of its "attributes of peculiar economic efficiency, of limited liability, and of perpetual freedom from state interference."

The next article is Gardiner Means' well-known empirical study of "The Growth . . . of the Large Corporation in American Economic Life" (1931). This article is the first to betray the editors' principle of showing the development chronologically of economic historiography, but its inclusion is doubtless justified by the sharp contrast which it provides to the material contained in the Handlins' piece. Using income and asset statistics for the year 1927 from both business and government sources, Means conclusively demonstrated not merely the preponderance of the corporation in American business life, but also the extreme degree of concentration of corporate wealth in the "200 largest." The findings of this study are now dated, but the trend which it indicated has continued to the present, although probably at a somewhat reduced rate.

Leland Jenks' essay on "Railroads as an Economic Force in American Development" digs into some of the basic factors underlying the growth of the large corporation, but this is merely incidental, for it has much wider implications. Considering railroad innovations as ideas, as construction enterprises, and as producers of transportation services, this study is an early application of the Schumpeterian framework to economic, and especially to entrepreneurial, history. It is, like the Handlins', an outstanding contribution to American economic history.

The section on "business units" concludes with Arthur Cole's celebrated essay, "An Approach to the Study of Entrepreneurship," which served as his presidential address to the Economic History Association in 1946. Admirable as it is in both style and content, it is less important in itself than for its authorship, since the type of thinking which went into it has exerted an enormous influence on recent writing and research in economic history in America. By its nature, it might have fitted into the section on "method" equally as well as that on "business units."

Wesley Mitchell's brief essay on "The Role of Money in Economic History" is presented by way of introduction to the section on money and prices. Although it is less well-known and less brilliant than its companion piece (written many years earlier), "The Role of Money in Economic Theory," and does not itself qualify as economic history, it raises many questions of interest to economic historians and makes a cogent, still-relevant, plea for further research on its subject.

Eli Heckscher's "Natural and Money Economy as Illustrated from Swedish History in the Sixteenth Century" is an excellent choice and a notable contribution to economic history. Beyond being merely a treatment of "money," it is a vivid illustration of economic theory as a tool of historical research, and likewise shows how history may be used to modify or verify theory. The choice of "The Theory of Imaginary Money from Charlemagne to the French Revolution," by Luigi Einaudi, is much less happy. Apart from its undue length and a style which is as confusing as those of the authors that President Einaudi discussed, the thesis of the article — that "imaginary money . . . is not money at all," but merely an abstract unit of account whose relation to actual coins was established by decree — is, to say the least, questionable. A. P. Usher's painstaking research on "The Origins of Banking: The Primitive Bank of Deposit, 1200–1600," illustrates the refinements and complexities of medieval banking in the same fashion that the articles in Section I do for medieval commercial enterprises.

"Prices and Industrial Capitalism in France and England, 1540–1640," by

J. U. Nef, and "Profit Inflation and the Industrial Revolution, 1751–1800," by E. J. Hamilton, are of unusual quality. Both are concerned with highly significant topics; they exhibit precise scholarship, and are written with great clarity of style. Moreover, when placed in juxtaposition, they have the additional virtue of portraying these two eminent scholars engaged in gentlemanly conflict on matters of interpretation of basic data. It should be added, however, that neither scholar is forced to lower his standard. Nef points out that "the influence of price changes [on industrial development] was complex rather than simple" and adduces other factors which, in addition to the influx of precious metals, help to explain the differential development of industry in France and England in the later sixteenth and early seventeenth century. Hamilton brings to bear on a highly significant episode of economic history a method largely worked out by him and associated with his name, which in this application has provided students with another key to understanding the early and rapid development of modern industry in England.

In "Treasure and Trade Balances: The Mercantilist Problem," Charles Wilson entered the lists against Keynes and Heckscher in interpreting the mercantilists' concern with controlling the flow of bullion. Wilson's thesis, which was subsequently disputed but never wholly refuted by Heckscher, is that mercantilist policies are to be explained at least in part by the bilateral character of much seventeenth-century trade — in particular, the trade of England with the Baltic area, which imported very few English goods while exporting thence a great deal of shipbuilding material and iron. A further picture of English finance, this time in the eighteenth century, is provided by an excerpt from Sir John Clapham's two-volume work, *The Bank of England*. This selection exhibits Clapham's uncanny ability to synthesize and summarize huge quantities of dry, factual data, but, like several of the other selections, including Wilson's, it does not tie in with anything else in the volume and leaves one with a curious feeling of inconclusiveness.

"Ricardo and the Bullion Report," a portion of Norman J. Silberling's investigations of monetary behavior and financial policy during the period of the Bank Restriction, is more properly a study in the history of economic doctrine than in economic history. However, it exemplifies the close interdependence of economic theory and economic history. In fact, Silberling's chief criticism of Ricardo (which has in turn been criticized by Jacob Viner in his *Studies in the Theory of International Trade*) was Ricardo's well-known tendency to overlook the facts of economic experience. Silberling's general conclusion, that monetary policies applicable to normal peacetime conditions are not necessarily suitable for periods of emergency, is accepted as commonplace today.

John H. Williams' brilliant 1931 analysis of "The Crisis of the Gold Standard" has since been supplemented but not superseded. The analysis of the crisis itself is preceded by a very brief explanation of the prewar operation of the gold standard, and a somewhat more extended treatment of monetary and financial policy in the 1920's. It is a pity, for the purposes of this volume, that the article does not qualify as economic history.

The section on "method" might well have come at the beginning of the book. Edwin F. Gay's "Tasks of Economic History" needs no introduction for American scholars. Clapham's classic of compression, "Economic History as a Discipline," is justly included, even though it is easily available in the *Encyclopaedia of the Social Sciences*. There are grounds for advocating that it should be drilled

until it is indelibly imprinted in the mind of every young economic historian. Heckscher's "Plea for Theory in Economic History," if read in conjunction with or prior to his article on "Natural and Money Economy," illustrates in a striking manner the close relation, in the writing of economic history, between method (properly applied) and results.

The three remaining essays on method, by Arthur Spiethoff, François Simiand, and Marc Bloch, are somewhat less successful choices than their predecessors, but interesting nevertheless. For all three the editors have deemed it wise to include somewhat lengthy introductions (13 pages for Spiethoff, longer than any of the three preceding articles, and very nearly as long as Gay's and Clapham's combined). A few scholars may regard the introductions as superfluous, but probably most readers, whatever their opinion on the propriety of including them in such a volume, will find them helpful. Fritz Redlich has done an excellent job in translating selections from two different sources by Spiethoff under the title of "Pure Theory and Economic Gestalt Theory; Ideal Types and Real Types." Despite both introduction and good translation, it makes difficult reading, but rewarding for those interested in German methodological developments. Simiand's contribution, likewise selected from two sources published very early in his career and here presented as "Causal Interpretation and Historical Research," is much less so. It is, for the most part, a highly abstract epistemological argument — concluded by a curious dialogue between Simiand and "Cantecor" — which is but indirectly related to Simiand's actual methodology or to the type of economic history which resulted. Bloch is represented by his celebrated article, "Toward a Comparative History of European Societies." This is the longest of the essays on method, and though it is an excellent piece of writing, it suffers somewhat in translation. It contains many excellent illustrations of a principle long since considered the common property of economic historians, but which, nonetheless, is honored more in the breach than in the observance.

Frederic Lane's "Conclusion" to the section on method is not really a conclusion at all, but an original essay concerned with the "theoretical" and "historical" interests (why not "economic" and "historical"?) in economic history. As such, it has much merit, but the propriety of including it in this volume may be questioned in view of the fact that he is already represented. Clapham and Heckscher are the only other authors to be honored by two inclusions.

II

Criticism of a collection of this nature, apart from criticism of individual contributions or selections, should distinguish between the degree to which the editors have realized the objective implicit in the plan of the volume, and the validity or utility of the plan itself. (Criticism of the latter variety is less common, but in the case of a book issued under the sponsorship of one or more professional associations it may have greater relevance than normally.) The major objection to be made on the former count is the uneven historical coverage of the topics selected. Six of the eleven selections of the first section deal almost exclusively with the pre-modern period, and three deal with aspects of American business enterprise. One takes all history into its purview, in the style of a high school text; one is largely devoid of substantive historical content. The uninitiated, for whom the volume was in part intended, may well ask:

was there nothing in the history of Europe, from the sixteenth century to the present, relevant to the development of business units? From the Venice of the *doges* to America in the early national period is a long jump. The intended "intensiveness" of treatment fails to emerge except with respect to the single topic of the Italian merchant of the late Middle Ages, which commands a total of four articles, plus incidental references to it in others. There is only the most tenuous connection — and that largely terminological — between Schmoller's ruminations on large-scale enterprises of antiquity and Means' empirical study of the modern corporation, whereas the important and far-flung implications of Jenks' study crowd uneasily into the narrow confines of the topic of "business units."

Similar disparity of coverage exists in the section on money and prices. Of the eight selections having substantive historical content, six deal with medieval and early modern times (to 1750), one with the late eighteenth century, and one with the very early nineteenth. There is nothing on the development or normal operation of the gold standard, as opposed to its collapse; nothing dealing with modern central banking, nor with the distinctive characteristics of modern business fluctuations. The unique monetary and financial experiences of the American colonies and the United States, which are, for the general economic historian, among the most important and distinctive of all aspects of American economic history, rate a bare mention. To the extent that the monetary aspects of the great development of industry and the accompanying flowering of an international economy in the nineteenth century are treated at all, they are done so only incidentally in an analysis of the breakdown of the monetary mechanism which, as economic history, stands on substantially the same footing as Ricardo's reflections on the *High Price of Bullion*.

It is, perhaps, a picayunish matter that at least four of the authors represented in the volume are not (or were not), and did not consider themselves to be, economic historians, since the ratio may well be proportional to the contribution of academic outsiders to the development of the discipline. Of somewhat greater significance, possibly, is the breakdown of the contributors by nationality. Fourteen are American (this includes, to be sure, one of Belgian origin, but considers the Handlins — as they no doubt prefer — as one); there are three Germans, three Italians, two French, two English, and one Swede. The preponderance of Americans in this listing may possibly be excused on the grounds that the volume is intended primarily for American readers and is sponsored by American professional associations; but it can scarcely be contended that it represents the proportional contribution of American scholars to the subject. Moreover, as the editors state in their preface, economic history is "an international intellectual enterprise," and it behooves the world of scholarship to overcome the narrow provincialisms which afflict the general run of mankind. The number of Italian scholars here represented would not overrate the importance of their achievements in economic history if the other nationalities were placed in better perspective. But the contributions of German scholars, in spite of their relatively low productivity in recent years (which is understandable enough) are probably underrated, and this is certainly the case with the French and English, not to mention the scholars of other lands who are totally unrepresented. One searches in vain among the contributors for such outstanding names as Ashley, Ashton, or Tawney of England; Braudel, Fevre, or Sée of France; Weber of Germany, Pirenne of Belgium, Dopsch of Austria,

and Innes of Canada, to mention only a few. Merely to mention the omission of such scholars is to question the usefulness of the plan of the volume.

Economic history is too broad a field to succumb easily to summarization, even of its highlights, as has been successfully done with international trade, business-cycle theory, and other specialized fields of economics which have benefited from collections of readings sponsored by the American Economic Association. In all fairness to the editors, it must be acknowledged that they have faced the fact that economic history has at least as many areas of specialization as economics itself.

There are three main approaches which might have been followed in planning this volume. The most obvious, perhaps, would have been to select the best single short selections of each of the greatest economic historians — until the allotted number of pages was used up. There is much to be said in favor of this approach, but it has several drawbacks as well, and the editors cannot be severely criticized for rejecting it.

Another method which has much to recommend it is the selection of a few "vertical slices" of economic history in order to show the pattern of development within each. The difficulties of this plan are that it does not exhibit the range of problems studied by economic historians and, if it is to be successful, the individual selections must be made solely with regard to their appropriateness to the particular "vertical slice" and without respect for the general reputation of their authors. It is this method which served as the basis of selection of the present volume, but the editors have attempted to compromise by including elements of the others. In choosing for fuller presentation the two vertical slices, "business units" and "money and prices," they have submitted to a form of faddishness in the recent writing of economic history in America, and have thereby created additional, avoidable difficulties for themselves. These themes are at once too narrow to present a full view of the scope of economic history and too broad to demonstrate satisfactorily the process of historical development within either. Not only has this plan forced the exclusion of the work of many of the most notable economic historians, but it has also dictated that others could be included only through the use of material which is unrepresentative of their best (or best-known) work. This is notably true in the case of Usher; the inclusion of his article on medieval banking is a tribute to the extraordinary versatility of one of America's greatest economic historians, but the article itself is not representative of the type of work for which he is most famous. Much the same can be said of Clapham's selection on the Bank of England; it is to be regretted that the plan of the volume did not permit the use of one of this great man's masterly syntheses of the broad currents of economic history. The contributions of Nef and Hamilton are eminently satisfactory; but one would scarcely believe that the former is best known for his research on price history, and it is a curious commentary on a collection of readings in economic history that Hamilton's is the only article to deal with the industrial revolution.

There is, finally, what might be called the "horizontal" method of selection. Had the editors devoted two or three articles each to a few of the major problem areas treated by economic historians it would have been possible to show to better advantage the wide range of the subject without appreciable loss of "intensiveness," and at the same time to have included the best work of the greatest writers in the field. (One thinks at once of the "Mohammed and

Charlemagne" question and its great stimulus to economic historiography.) Some, at least, of the selections on the medieval Italian merchant would have fitted admirably in such a scheme. Had this principle been followed, the volume could have treated the important topics of the origins of capitalism, mercantilism, and the industrial revolution in a form which, as a minimum, would have presented the most important of the prevailing views and would have incorporated some of the truly great names in economic history. Likewise, some significant aspects of recent European and American economic history, such as the rise (or decline) of an international economy and the role of government in the American economy, could have been granted deserved attention. Under such a scheme of organization, most of the major objectives of the editors would have been achieved within the same space, and the resulting collection would have given a decidedly more accurate picture of the past development and present status of economic history.

In conclusion, this is an important volume: important for its defects, which have perhaps been unduly emphasized in this review, as well as for its very real merits. It will serve as a handy reference for the practicing economic historian, especially in teaching, and there are those who will feel that it is entirely adequate for its purpose. It will also serve as a survey of or introduction to the field for the nonspecialist, and many will feel that in this respect a great opportunity has been missed.

RONDO E. CAMERON

University of Wisconsin

BOOK REVIEWS

Encyclopedia of American History. Edited by Richard B. Morris. New York, Harper and Brothers, 1953. Pp. xv + 776. 32 maps and charts. $6.00.

To the student of business history this is indeed a strange book, though undoubtedly one of considerable utility. The editor, with the assistance of a staff of specialists, has attempted the difficult task of placing the main facts of American history in several convenient plans of reference. The first, which takes over half of the book, presents the basic political and military facts in a chronological system, starting with the original peopling of the Americas about 10,000 B. C., but moving up rapidly to the founding of the English colonies, at which point the treatment becomes quite detailed. Annual listing of events begins at 1763. The second plan of reference covers the nonpolitical aspects such as population, the economy, religion, thought, and culture. The third part of the book — about 100 pages — contains thumbnail biographies of 300 notable Americans from all walks of life, including 18 business leaders.

This commentary will be primarily concerned with the 50 pages devoted to the American economy, for which Professor Thomas C. Cochran served as Consultant Editor. This section is subdivided into the traditional topics of Agriculture, Commerce and the Tariff, Industry, National Public Finance, Banking and Capital Markets, Business Cycles and Price Trends, and Labor, Slavery, and Social Reform. Within each of these subdivisions the treatment is chronological, often involving summary statements covering blocks of years. For example, under Agriculture we find a good piece on "The Impact of Land Tenure" followed by "Aboriginal Farming," "1607–1700 Cereal Cultivation," "1612–1700 Expansion of Tobacco Cultivation," and "1701–75 Southern Trends." In some cases the reasons for the precise dating are not altogether clear. In addition to this section, students of economic and business history will also find items of interest, such as pieces on legislation and invention, scattered throughout the other sections. The writers have been successful in keeping the individual statements factual, and in this connection have made liberal use of statistical material. They are to be complimented on their compact summaries. Thus, the book will undoubtedly be very useful to those looking for summarized information.

Considered as an encyclopedia the work shows up at its best in its treatment of specific events, such as legislative measures. In the less precise and more analytical realm of economic history, in which broad trends, both statistical and institutional, require careful presentation, the value of this type of book is less certain. If read as a block, the section is nothing but a cumbersome and jerky thumbnail sketch of American economic history on a more or less chronological basis within the topic headings. But if the volume is used for reference purposes, as is undoubtedly the intention, the scheme of presentation is awkward unless one uses the admirable index. It is also doubtful if the method permits the reader to get that understanding of a functioning economy which is such an important part of economic history. In short, it is difficult to see what this section accomplishes which could not better be done by a good general textbook with a proper index.

Students of American business history will find the work somewhat dis-

appointing. While the coverage of economic history is considerable, but by no means complete, there is very little material on the development of business organization and administration. For example, the section on Commerce deals with mercantilism and its legislation, some statistical aspects of the export and import trade, and of balance of payments, the merchant marine, and the tariff, but has nothing on the changing structure of the mercantile firm. Likewise, under Industry there is comparably little on the great administrative and organizational changes which have made possible the modern industrial corporation. Notable by their absence are notes on internal organization, accounting, financial structure, ownership patterns, marketing methods, and personnel policy. There is no general section on transportation. The section on "Business Cycles and Price Trends" — a combination of business annals and scattered statistical indicators of economic conditions — is another indication that economic history does not lend itself well to this type of treatment. National income analysis is a little too complicated to be so easily summarized.

Despite these criticisms the book is a very substantial achievement which reflects great credit on the editor and his colleagues. For many persons and purposes it will be an indispensable handbook.

JOHN G. B. HUTCHINS

Cornell University

• • •

Winchester: The Gun that Won the West. By Harold F. Williamson. Washington, D. C., Combat Forces Press, 1952. Pp. xvi + 494. $10.00.

A "Sportsman's Press Book," with the subtitle *The Gun that Won the West* and with a mounted plainsman pictured on the cover, might be expected to deal primarily if not exclusively with the West and with guns. This big, handsome, well illustrated volume turns out, however, to be neither about the West nor about guns as such, though it does contain much to interest gun fanciers and sportsmen. It contains far more to interest business historians, for it is essentially a history of the Winchester Repeating Arms Company, of New Haven, Connecticut, from the company's origins in the 1850's to its receivership in 1931.

Olin Industries, Incorporated, the present owners of the company, who financed the research of Professor Williamson, allowed him "complete freedom," as he states, in his use and interpretation of the company's records, on which his study is mainly based. Obviously he has exercised his freedom. Recounting failures as well as successes, he appraises the company's policies at various periods fairly and frankly. At one point he speaks out to charge the management with an "almost incredible blunder in judgment."

Oliver F. Winchester, turning from the manufacture of clothes to the manufacture of guns, conducted the business with a proper balance of boldness and caution and left it on strong foundations at the time of his death in 1881. His successors, members of the Winchester family by birth or marriage, carried on his essentially conservative policies, which enabled the company to hold its own among the leading arms makers of the country until the outbreak of the first World War. Up to that time its profits had come almost entirely from the manufacture and sale of sporting arms and ammunition, though it sold some weapons to the American government during the Civil War and the war

with Spain and, in between the two, made with the Turkish government a contract that helped to get the then struggling company on its feet. It had financed its growth out of earnings.

Then, in 1914 and after, the management eagerly accepted contracts with the Allies and with the United States in the hope of financing a new plant out of profits. But costs rose so fast that earnings were disappointing, and the company had to borrow heavily to complete its plant expansion program. At the end of the war the management faced a dilemma. The alternatives were, on the one hand, to return to arms and ammunition manufacture for a peacetime market and scrap the surplus plant at considerable sacrifice or, on the other, to find uses for the increased plant capacity by developing a supplementary line of products.

If leadership had been available from within the Winchester family, Professor Williamson suggests, the company might have resumed the conservative program which had accounted for its earlier success. But outsiders were now in control. As the company's creditor, the investment banking firm of Kidder, Peabody & Company could exercise a deciding influence on policy. As a Winchester director after 1918 and chairman of the board after 1924, the drugstore entrepreneur Louis K. Liggett, with the backing of the bankers, induced the company to set up a chain of hardware and sporting goods stores on a pattern similar to that of his Rexall and Liggett drug chain. The experiment stimulated Winchester dealers, and their competitors as well, to modernize their merchandising methods, but it was disastrous for the Winchester company itself. The onset of the great depression only confirmed the errors of the new regime.

In the 1920's Winchester's competitors in the arms business, as Professor Williamson notes, refrained from such experiments and escaped the consequences. It might be pointed out here that, half a century earlier, another arms manufacturer had undertaken a comparable diversification program and had suffered almost as disastrously. After the Civil War the firm of E. Remington & Sons, of Ilion, New York, branched out from guns to sewing machines, farm implements, and typewriters. Many of the new products lost money, and even the typewriter netted very little. By the middle 1880's the Remingtons were on the verge of bankruptcy.

Professor Williamson's study is valuable for the cross-section it presents of American business history over an eighty-year span. It is even more valuable for the sidelights it throws on such neglected and obscure phases of the subject as the practice of "inside contracting." This system of labor management, widely used in New England industrial plants until the end of the nineteenth century, "has been largely ignored by students of labor history," as Professor Williamson says. He therefore discusses it "in more detail than is warranted by its importance in the development of the Winchester Repeating Arms Company." He characterizes the system thus: "By taking a contract to secure and supervise a labor force and to manufacture products within the factory of the capitalist, using his machinery and equipment, the works supervisor or master mechanic could maintain considerable independence, yet avoid the problems of salesmanship and financing. At the same time the capitalist was freed from most, if not all, of the more technical problems connected with production, process improvement, and labor supervision."

Above all, Professor Williamson's study is valuable as an extraordinarily re-

warding case history in business management. It is to be recommended without qualification to all who are interested in entrepreneurial experience, whether as students of the past or as practitioners in the future.

RICHARD N. CURRENT

University of Illinois

• • •

Israel Thorndike: Federalist Financier. By J. D. Forbes. Published for the Beverly Historical Society by the Exposition Press. New York, 1953. Pp. 160. Bibliographical note. $3.50.

Previously neglected by historians, the career of Israel Thorndike, extraordinary New England enterpriser, has finally been given its proper importance. It is an absorbing story. Rising from humble circumstances, Thorndike amassed a fortune exceeding $1,000,000 in a period of transition when commercial capitalism was yielding to industrial capitalism.

Thorndike's first interest was the sea. In 1772, when only seventeen, he owned at least eight vessels, six operating in the fishing trade and two in international trade. During the revolution Thorndike, like most merchants, took up privateering in addition to pursuing other trade opportunities. Although he suffered losses, he did not share the fate of many of his contemporaries who were ruined in the concluding years of the war. After the revolution Thorndike again seemed to be more successful than other merchants in meeting the new and uncertain marketing conditions. His operations in the Caribbean prospered in the 1780's and a decade later his commercial enterprises expanded to include other areas, particularly the Orient. By 1803 Thorndike's property was valued at approximately $400,000; by 1812 he employed 200 seamen annually, a number exceeded in Massachusetts only by William Gray.

But one of the most interesting periods of Thorndike's career begins during the War of 1812, when he invests in manufactures as well as trade, and continues until his death in 1832. Indeed there is much to be said for the author's statement that Thorndike was the "archetype of his species in the given place and time." Although Thorndike participated in an unsuccessful attempt at cotton manufactures quite early, his first major investment was the Boston Manufacturing Company incorporated in 1813. Along with his son, Israel Jr., Thorndike played a dominant role. He was elected president in 1817 and held that position until shortly before his death. Under his administration the total dividends declared by the company amounted to 238 per cent, with the highest annual declaration being 27 per cent and the lowest 7 per cent. Thorndike himself extended his investments in manufacturing stocks so that by 1832 they were valued at $453,100 (more than one-third of his total estate), distributed among eleven companies.

In addition to relating this essential story, the author describes the role of his subject in political affairs. He illuminates the relationship between business interests and political policies, and he gives us a glimpse of Thorndike as a person who, although often considerate and temperate, was known on occasion to be incredibly mean in spirit.

It does not detract from the contribution made by Dr. Forbes to mention a number of things he fails to do. When the operations of Thorndike are discussed, they are seldom related to contemporary business conditions. At times

Thorndike prospers when, knowing the general economic situation, one would expect him to experience setbacks. The Boston Manufacturing Company, for example, maintained its profits in 1819 and increased them in 1820 while there was a decided decline from 1826–31. Why? This and similar questions Forbes fails to consider. His description of Thorndike's operations is often vague. We are informed that Thorndike entered an important business partnership with Moses Brown of Waltham (not to be confused with Moses Brown of Providence) about 1772 which lasted until 1800. In some respects they were the most important years because Thorndike's rapid capital accumulation made possible the broadening of his interests. Yet, Forbes gives the impression that Thorndike is acting alone rather than within the framework of the partnership. In this regard, the author fails to emphasize the important trend which Thorndike reflects — the change in business organization from partnerships to corporations.

Although the impact of Thorndike's rise to power and the growing diversity of his interest tends to be lost unless a reader refers constantly to previous chapters and pays unusual attention to dates, this small, readable volume will be welcomed by anyone interested in the economic development of the United States.

CLARENCE L. VER STEEG

Northwestern University